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KEYFRAME
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JULY – AUGUST 2004

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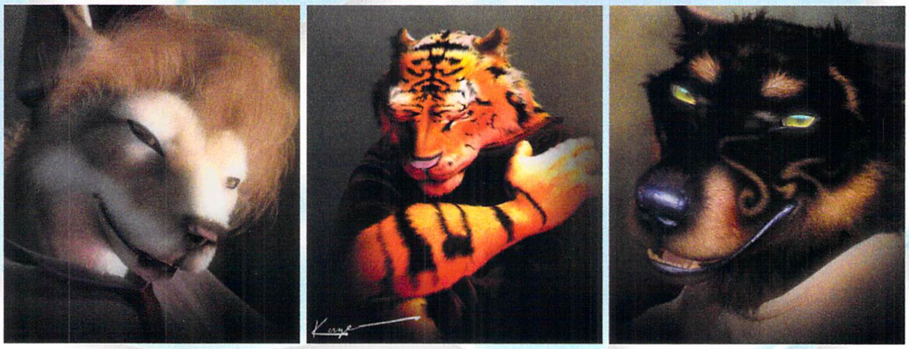

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from Dan Ablan

Sometimes I think about the good ol' days. No, not college, but after college, when 3D was new and exciting and fun. Today, it's a job. The fun is hard to find, between writing books, editing magazines, meeting with clients, going to dance recitals, paying the bills, and so on. But what makes 3D a whole lot less fun is when you're personally attacked.

I've been in this business long enough to see many people who've started out as hobbyists transform themselves into professionals working on the next big summer blockbuster. They have truly mastered their craft and succeeded. On the other hand, I've also seen the bad side of the business – the backstabbers and liars who love to post negative public comments. Now with any profession, there will always be someone better than you and someone worse than you, but no one has the right to trash you or your work.

Over the past year or so, the world of LightWave 3D, especially online, has become a not-so-friendly place. Perhaps it's global warming? Perhaps it's stress? Who knows? What I do know is that many people are having their work and reputations chipped away at by negative comments on public forums. This never would have happened in the good ol' days. Everyone got along and truly loved 3D. Today, it's a different story.

I'm not here to lecture anyone, but I can tell you that there are other hardworking LightWave artists who work in this field because they love it —because it's fun. With these ongoing attacks though, before long, it will be fun for no one, and the LightWave community as we know it might just turn to dust.

Lighten up everyone - and have some fun. No one is an expert and there is always something more to learn.

Dan Ablan

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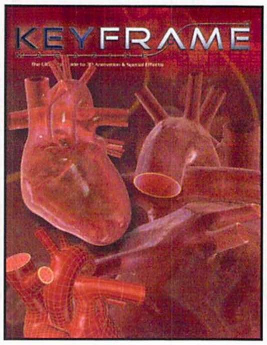
Cover art by Robert Calandriello

When Dan Ablan asked me to create a medical cover for an edition of Keyframe, I immediately thought of a recent heart project I needed to model for work. It would be an awesome lesson, since the geometry is a challenge due to the fact that there are quite a few main arteries and veins running in and out - over and under - of this amazing human organ. Once modeled, texturing became a question ... map images of a real heart, or texture with a subtle red tone technique I've been anxious to try which I picked up from Dan. As you can see, I opted for the subtle red tones.

To see more of Bob's work, visit www.robertcal.com.

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LW ESSENTIALS— SIMBIONT LW SHADER PLUG-IN

BY BRAD CARVEY

Simbionts are plug-ins used to quickly add cool textures to your CG models. The Simbiont Shader Plug-in is a free plug-in for LightWave (and other 3D applications) from Darkling Simulations. Included with the plug-in are over 300 prefabricated textures (shaders). Each texture has what Darkling Simulations calls "tweaks." Tweaks are components of the prefabricated texture that the user can modify for their specific needs.

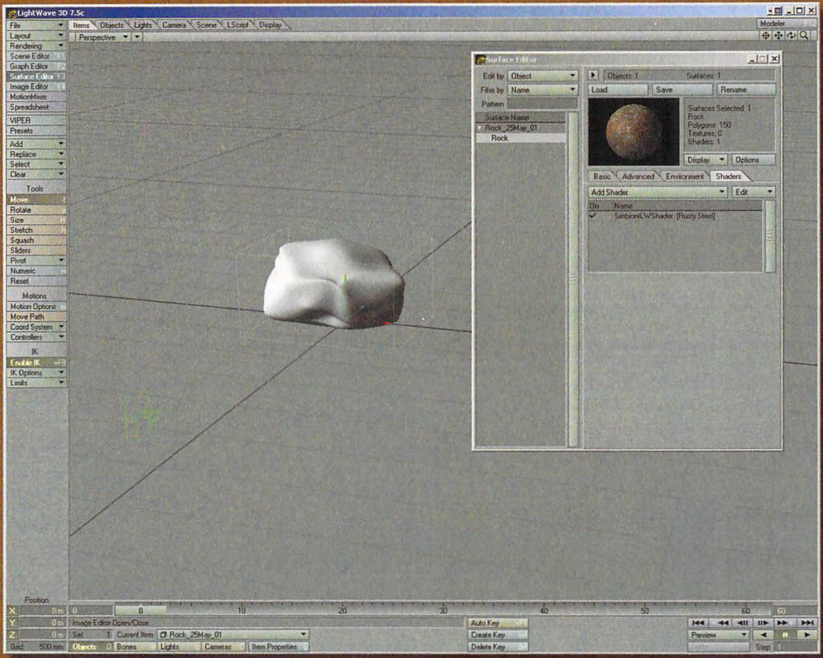
DOWNLOAD AND INSTALL THE SIMBIONT SHADER PLUG-IN

1. Download the Simbionts plug-in, "SimLW25.exe" from www.darksim.com.
2. Download DarkTree Shaders with Thumbnails from www.darksim.com.
3. Double click the downloaded plug-in, "SimLW25.exe" file and follow the install instructions.
4. Unzip the DarkTree Shader file, "DTRep_thumb.zip" to a convenient location (e.g. C:\DarkTree).

ADDING A SIMBIONT SHADER TO AN OBJECT

1. Load any object into LightWave. See FIGURE 1.
2. Open the Surface Editor and select the Shaders tab.
3. Click on "Add Shader" and select SimbiontLWShader.
4. Double Click the Simbiont Shader.
5. The SimbiontLWShader Control Panel will open. See FIGURE 2.
6. Click Load and navigate to your DarkTree Shader Directory.
7. Open tx_metal directory and select metalRustySteel.dsts file.
8. Render Scene. See FIGURE 3.

FIGURE 1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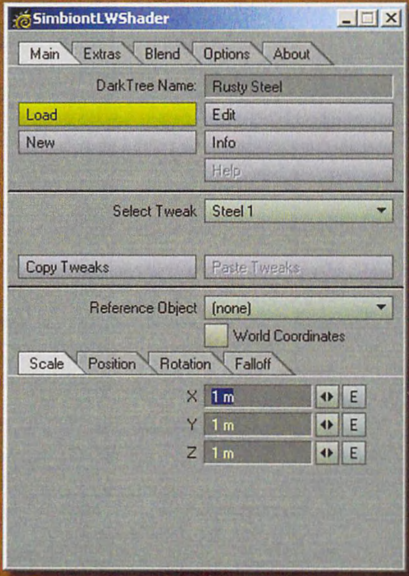
Add Shader
SimbiontLWShader (Rusty Steel)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Blend
Options
About
Load
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Edit
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Help
Copy Tweaks
Paste Tweaks
Scale
Position
Rotation
Falloff

DarkTree Name: Rusty Steel

Select Tweak: Steel 1

Reference Object: (none)

☐ World Coordinates

X 1 m

Y 1 m

Z 1 m

FIGURE 2

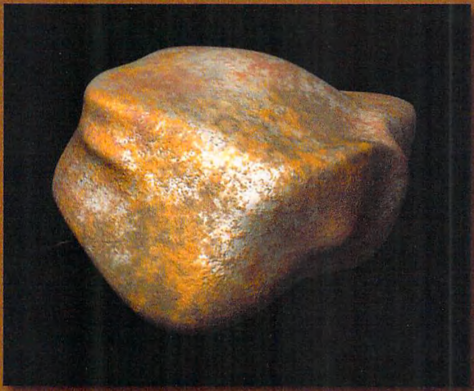
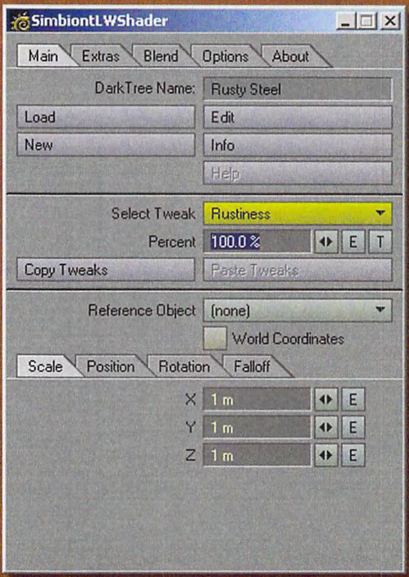


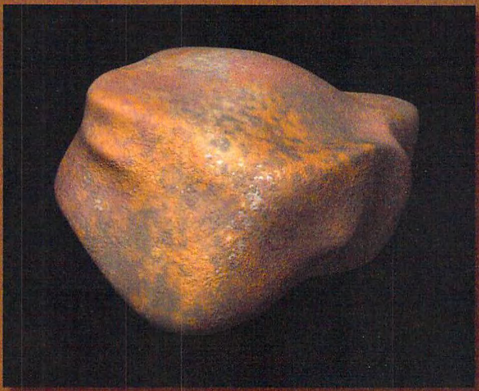
FIGURE 3

FIGURE 4



DarkTree Name: Rusty Steel
Select Tweak: Rustiness
Percent: 100.0 %
Reference Object: (none)
☐ World Coordinates
X 1 m
Y 1 m
Z 1 m

FIGURE 5



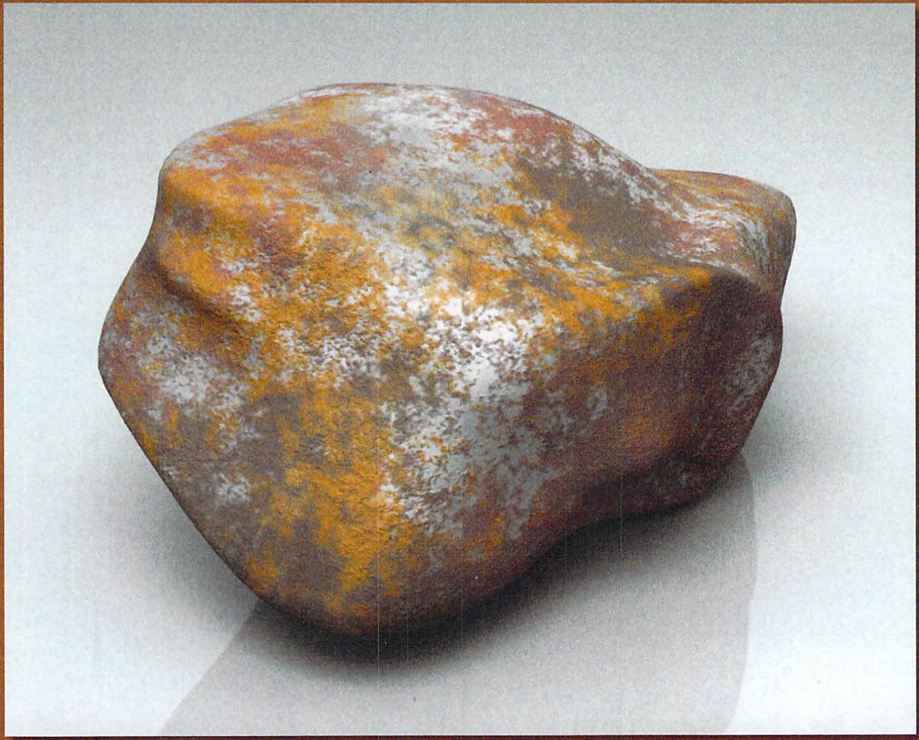


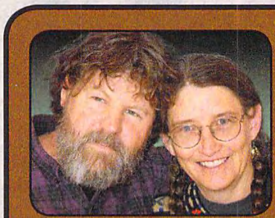
FIGURE 6

SELECTING & ADJUSTING TWEAKS

1. Open the SimbiontLWShader Control Panel and Select the dropdown menu to the right of "Select Tweak."
2. Scroll down and select "Rustiness." Change the value to 100%. See FIGURE 4.
3. Render Scene. See FIGURE 5.

Simbionts are a great way to quickly make your models look good. FIGURE 6 shows a simple object with two area lights and a reflective floor. Try some of the other Shaders, and don't forget to modify the tweak settings. Try using envelopes and textures to modify the Shader's behavior and appearance. For example, the rustiness amount could be animated using an envelope. All of the Simbiont Shaders are created with a commercial product, from Darkling Simulations, called DarkTree 2.5. If you are interested in creating custom Shaders that you and others can use, then you may want to take a look at the DarkTree program. ■

Note: All files used in this tutorial are also available in the "Resources" section at www.keyframemag.com.



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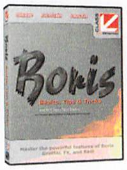

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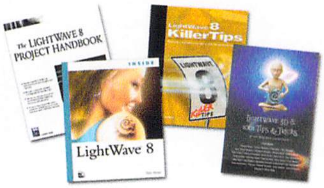

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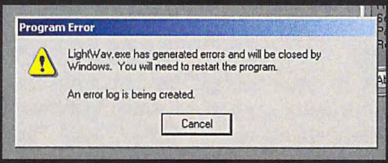
To Render, or Not to Render...

BY CRAIG MONINS

This is not the question when it comes to our 3D scenes; if you've made it, chances are you're going to want to render it. As I am currently working on, and trying to render, my own (probably over ambitious) film, I thought I'd share with you all some of the techniques I have had to develop along the way. There's one big thing missing in a project of this nature, and that is a render farm, with countless gigs of RAM to spare, and this can be the difference between rendering, or not.



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An error log is being created.

The trick, obviously enough, is to break a single frame into portions that your hardware can manage, and then reassemble them later in post. This is what we will be covering here today — how to take a big scene that appears un-renderable (usually signified by an almighty crash) and split it into nice bite-size chunks. We will be doing this with the help of LightWave's plethora of include, exclude, and matting options for objects, and then taking our renders into Adobe After Effects.

I have chosen for this example a scene from my own film-in-progress, and I will be providing you with the models, scene files, and a set of pre-rendered frames. Go to www.keyframemag.com, and in the resources section you should find the files highwayLW.zip, and highway_frames.zip. The first is all the

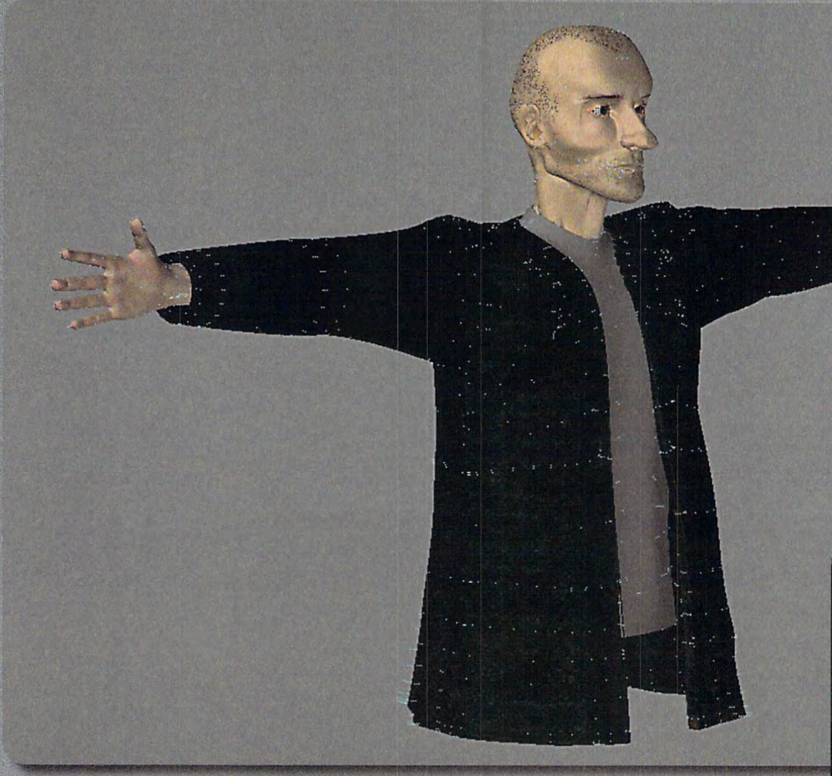
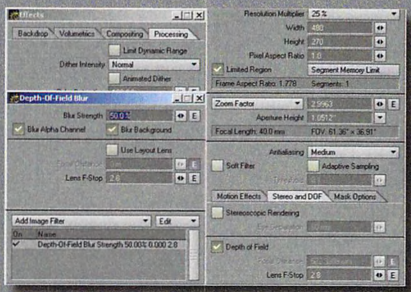


IMAGE 01



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☐ Animated Dither

Blur Strength: 50.0 %
☑ Blur Alpha Channel
☑ Blur Background
☐ Use Layout Lens
Lens F-Stop: 2.8

✓ Depth-Of-Field Blur Strength 50.00% 0.000 2.8

Resolution Multiplier: 25 %
Width: 480
Height: 270
Pixel Aspect Ratio: 1.0
☑ Limited Region
Segment Memory Limit
Frame Aspect Ratio: 1.778 Segments: 1

Zoom Factor: 2.9963
Aperture Height: 1.0512"
Focal Length: 40.0 mm FOV: 61.36° × 36.91°

Antialiasing: Medium
☐ Soft Filter
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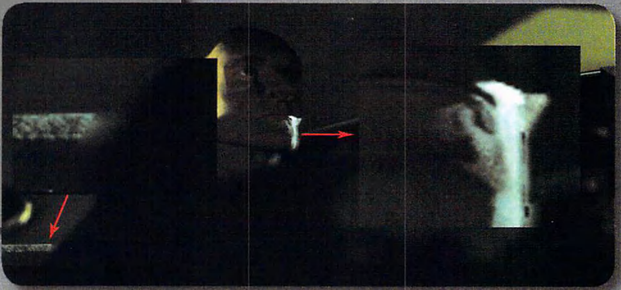
Lens F-Stop: 2.8

IMAGE 02

IMAGE 03



objects, scenes, etc., whereas the second is the rendered frames. This second file is a biggie though, 88MB, which may prohibit those on slower connections. I do believe, however, that waiting for this download will be quicker for most than rendering out the frames yourself from the example scenes. Once you have the highwayLW.zip, take a moment to check out the readme file for a description of what is included, and how the main scene is assembled. The zip file I got (kf_lwolws.zip) did not have a readme file.

If you will, cast your eyes first on the file highway.mov. This is a snippet from one of my shots, and I'll be taking you through its construction, from prepping your scenes to compositing the final renders. The first and most important thing is to be able to see this final product in your head well in advance of hitting F10 for the first time. Before you can break your scene down into parts, you have to know what they will all be, how they will fit together, and be aware of the problems you will encounter.

Here we have a few problems; DOF blur, motion blur, reflections, refractions, raindrops on the windows, raindrops outside, volumetric lights, the works. The scene in its entirety is the file Highway_MASTER.lws, so go ahead and load it up. If you feel adventurous, try hitting F9, I guarantee most of you will have LightWave crashing at this point, just the same as me. Horse feathers! So with that lesson learned, let's begin stripping things.

The first step is to reduce poly count as much as possible; this saves on memory, and a little on render time. You may notice that the Chevy model is somewhat incomplete, so let's follow on from there. Open the killer.lwo in Modeler, and use the polygon statistics to select, and then delete, all the polygons for his trousers and feet, (Image 01), as these are never seen in the scene. Save it as perhaps killer2.lwo, then in Layout select the killer, and from the file menu choose Objects>Replace with object file>killer2.lwo. By dragging your time slider, you should already begin to see a minor speed increase in your workflow. From here, let's move onto all of the actual effects of the frame.

DOF

We'll deal first with the depth of field. I find it easiest, organizationally, to work front to back. I use LightWave's native DOF solutions, no plug-ins, no X-Dof. I'm using a combination of camera DOF, and the DOF blur Image Filter (Image 02). Whilst you could just blur in post to make artificial DOF instead, I am pulling focus throughout this scene, requiring a true 3D DOF of some sort. Notice here that DOF gives horrid artifacts (Image 03) a lot of the time, the reason being that at some point in the image, you will have two overlapping polygons that have different levels of blur, but which occupy the same pixel(s). By splitting foreground and background elements, we can give each piece of geometry its own pixels in different images, with effective alpha channels to better handle the overlap. Start by Saving Scene As, highway_k.lws.

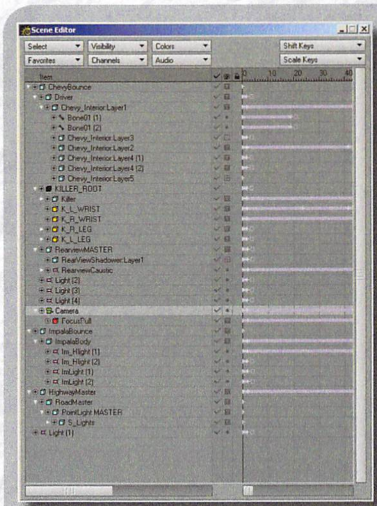
At the front then, we want the killer, and the steering wheel (chevy:layer2), but we still want all of the necessary shadows and lighting from other objects. In the scene editor, select and clear all of the background nonsense, the clouds and moon, under the BG main object. Clear also the highway object layers (1-6). Also, the only streetlights that will be lighting the killer are the ones on his side of the road, so you can clear all of the far side ones, located under the S_Lights (2) null. Neither will you need the HVs for this, so get rid of the emitter also. Lastly, remove the volumetric lights, located under the S_LightsV null (Image 04).

In the SpreadSheet editor, choose Object Properties: Render Flags, and turn off self shadow and receive shadow for everything except the killer, the wheel and the RearViewShadower. Once done, also set these same objects, plus the RearViewShadower, to be unseen by camera and alpha (Image 05).

Since this character is the focal point of our frame, we will be rendering him at full resolution, unlike the later layers. Make sure that your camera is set to 100% res and hit F9; you should have this image with its alpha channel (Image 06).

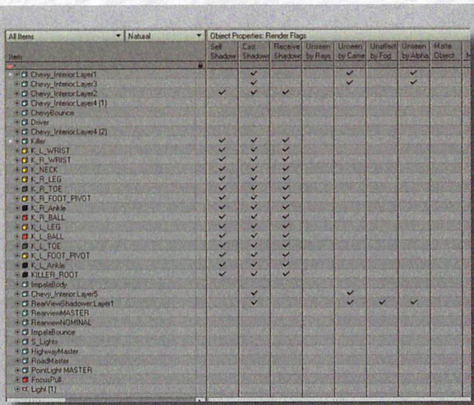
Next in line is the car interior. We can carry on using our current scene as the base, so re-save it, this time as highway_ch.lws. All of the settings for objects can remain the same, except that the chey_interior:Layer1 should be made visible to the camera and alpha, and have all its shadowing options turned back on, whilst the steering wheel and the killer should be set to not receive, or self shadow, and should be made invisible to the camera and alpha (Image 07). Since the car also contains very little surface detail, and doesn't draw much attention to itself, you can happily turn off the camera motion blur, the camera DOF, take the antialiasing (AA) level down to low, and turn on the soft filter. The resolution can also be turned down to 50% (Image 08). After a quick F9, you should have the following: (Image 09)

If at this stage you wanted to try a quick composite of the two images,



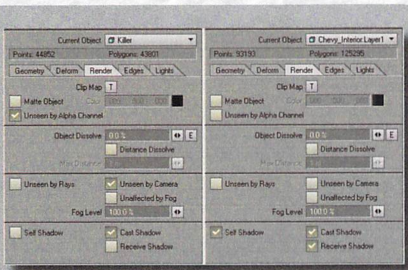
- ChevyBounce
  - Driver
    - Chevy_Interior:Layer1
      - Bone01 (1)
      - Bone01 (2)
      - Chevy_Interior:Layer3
      - Chevy_Interior:Layer2
      - Chevy_Interior:Layer4 (1)
      - Chevy_Interior:Layer4 (2)
      - Chevy_Interior:Layer5
  - KILLER_ROOT
    - Killer
    - K_L_WRIST
    - K_R_WRIST
    - K_R_LEG
    - K_L_LEG
  - RearviewMASTER
    - RearViewShadower:Layer1
    - RearviewCaustic
  - Light (2)
  - Light (3)
  - Light (4)
  - Camera
    - FocusPull
- ImpalaBounce
  - ImpalaBody
    - Im_Hlight (1)
    - Im_Hlight (2)
    - ImLight (1)
    - ImLight (2)
- HighwayMaster
  - RoadMaster
    - PointLight MASTER
      - S_Lights
- Light (1)

IMAGE 04



Item	Self Shadow	Cast Shadow	Receive Shadow	Unseen by Rays	Unseen by Came	Unaffect by Fog	Unseen by Alpha	Matte Object
Chevy_Interior:Layer1		✓			✓		✓	
Chevy_Interior:Layer3		✓			✓		✓	
Chevy_Interior:Layer2	✓	✓	✓					
Chevy_Interior:Layer4 (1)								
ChevyBounce								
Driver								
Chevy_Interior:Layer4 (2)								
Killer	✓	✓	✓					
K_L_WRIST	✓	✓	✓					
K_R_WRIST	✓	✓	✓					
K_NECK	✓	✓	✓					
K_R_LEG	✓	✓	✓					
K_R_TOE	✓	✓	✓					
K_R_FOOT_PIVOT	✓	✓	✓					
K_R_Ankle	✓	✓	✓					
K_R_BALL	✓	✓	✓					
K_L_LEG	✓	✓	✓					
K_L_BALL	✓	✓	✓					
K_L_TOE	✓	✓	✓					
K_L_FOOT_PIVOT	✓	✓	✓					
K_L_Ankle	✓	✓	✓					
KILLER_ROOT	✓	✓	✓					
ImpalaBody								
Chevy_Interior:Layer5		✓			✓			
RearViewShadower:Layer1		✓			✓	✓	✓	
RearviewMASTER								
RearviewNOMINAL								
ImpalaBounce								
S_Lights								
HighwayMaster								
RoadMaster								
PointLight MASTER								
FocusPull								
Light (1)								

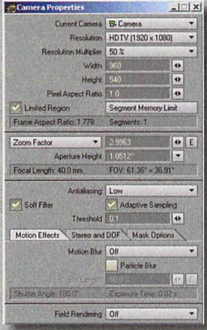
IMAGE 05



Current Object: Killer
Points: 44852 Polygons: 43801
Clip Map T
☐ Matte Object
☑ Unseen by Alpha Channel
Object Dissolve 0.0 %
☐ Distance Dissolve
☐ Unseen by Rays
☑ Unseen by Camera
☐ Unaffected by Fog
Fog Level 100.0 %
☐ Self Shadow
☑ Cast Shadow
☐ Receive Shadow

Current Object: Chevy_Interior:Layer1
Points: 93193 Polygons: 125295
Clip Map T
☐ Matte Object
☐ Unseen by Alpha Channel
Object Dissolve 0.0 %
☐ Distance Dissolve
☐ Unseen by Rays
☐ Unseen by Camera
☐ Unaffected by Fog
Fog Level 100.0 %
☑ Self Shadow
☑ Cast Shadow
☑ Receive Shadow

IMAGE 02



Current Camera: Camera
Resolution: HDTV (1920 x 1080)
Resolution Multiplier: 50 %
Width: 960
Height: 540
Pixel Aspect Ratio: 1.0
☑ Limited Region
Segment Memory Limit
Frame Aspect Ratio: 1.778 Segments: 1
Zoom Factor: 2.9963
Aperture Height: 1.0512"
Focal Length: 40.0 mm FOV: 61.36° x 36.91°
Antialiasing: Low
☑ Soft Filter
☑ Adaptive Sampling
Threshold: 0.1
Motion Blur: Off
☐ Particle Blur
Shutter Angle: 180.0° Exposure Time: 0.02 s
Field Rendering: Off

IMAGE 08

IMAGE 06

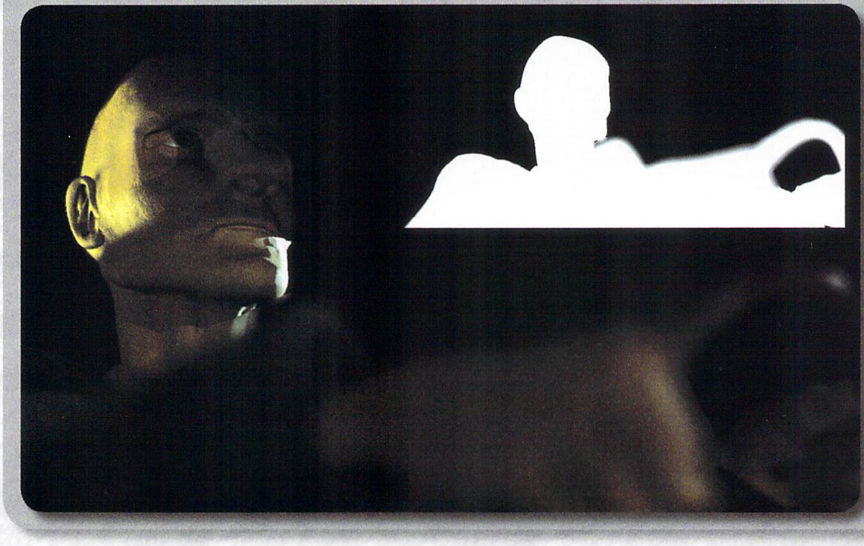


IMAGE 09

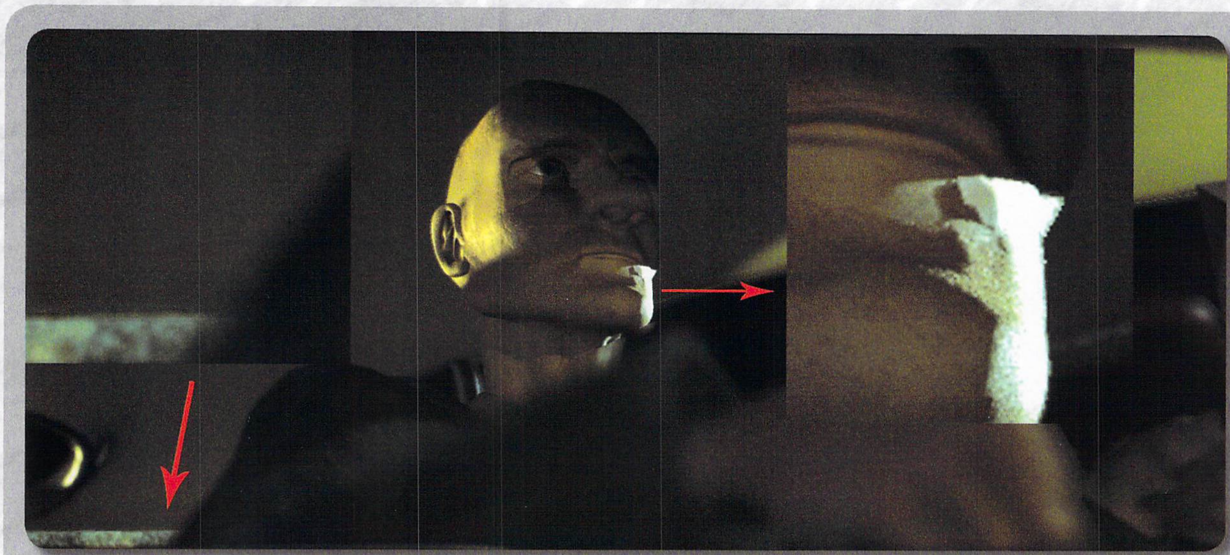


IMAGE 10

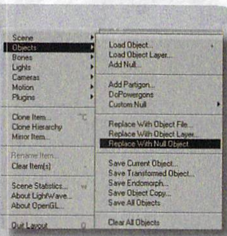
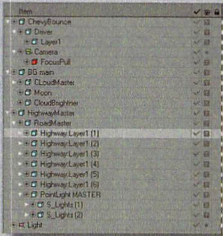

Scene
Objects
Bones
Lights
Cameras
Motion
Plugins
Clone Item...
Clone Hierarchy
Mirror Item...
Rename Item...
Clear Item(s)
Scene Statistics...
About LightWave...
About OpenGL...
Quit Layout
Load Object...
Load Object Layer...
Add Null...
Add Partigon...
DoPowergons
Custom Null
Replace With Object File...
Replace With Object Layer...
Replace With Null Object
Save Current Object...
Save Transformed Object...
Save Endomorph...
Save Object Copy...
Save All Objects
Clear All Objects

IMAGE 11



Item
ChevyBounce
  Driver
    Layer1
  Camera
    FocusPull
BG main
  CLoudMaster
  Moon
  CloudBrightner
HighwayMaster
  RoadMaster
    Highway:Layer1 (1)
    Highway:Layer1 (2)
    Highway:Layer1 (3)
    Highway:Layer1 (4)
    Highway:Layer1 (5)
    Highway:Layer1 (6)
    PointLight MASTER
      S_Lights (1)
      S_Lights (2)
Light

IMAGE 12

you could, and in doing so, you should notice that the nasty artifact pointed out before is no longer there (Image 10). Happy dance!

Next in line is the outside world. You may be thinking "what about the windows?" Those are a little trickier, and we'll come back to them later.

Reload Highway_MASTER.lws. Now, in this part, we don't need the killer or car objects at all, but wait -- the camera is a child of the car, and we don't want to mess that up. First of all, select the chevy_interior:layer1, and from the file menu, choose replace with null object (Image 11). You may now go through and clear the other chevy_interior layers and the killer.lwo from the scene entirely. You should also clear the Impala_Bounce object and its descendants to get rid of those unnecessary lights, and the internal lighting set up for the car is no longer needed, so lights 2-4 and rearview caustic may also be removed, along with all the volumetric lights, and again, the HV emitter. You should be left with just Light (1), the two banks of S_Lights, and of course the highway and sky objects (Image 12). Save this scene as highway_bg.

Again there is no need for Camera DOF, so deactivate it, but leave the motion blur. Take the resolution down to 50% with the AA still on medium, and you can even turn off all the ray trace options in the render panel. A quick render reveals this: (Image 13)

Now if it wasn't for the fact that this scene is set on a rainy night, we would be almost finished with our renders at this point, and we would have not only removed artifacts from our DOF shenanigans, but would have also saved ourselves a good deal of actual time spent rendering the thing. But seeing as it's more fun to have the rain, we'll move on and start getting those layers set up.

EFFECTS

We'll start with the easiest bit, which is the raindrops themselves. Without going into a long list of click this, clear that, you will want to create a scene more or less the same as the background one we have just finished, but without the highway objects, and without any DOF, Camera or Filter type. If you want to be sure, check out highway_hv.lws (Image 14). One note: to use motion blur

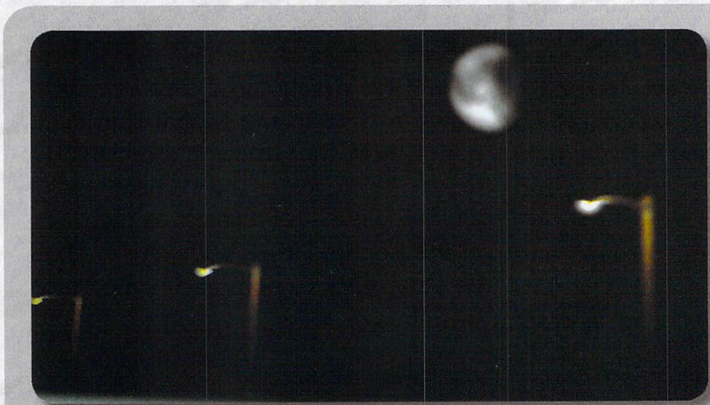


IMAGE 13

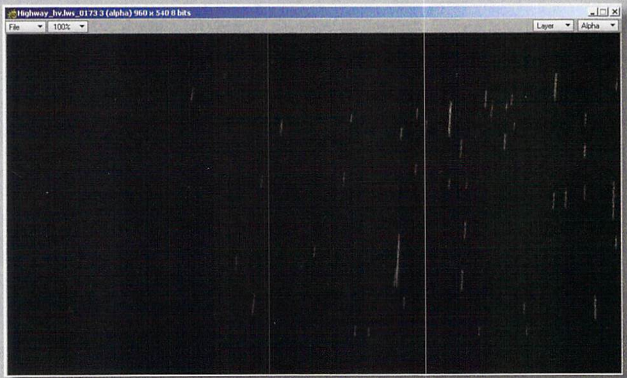
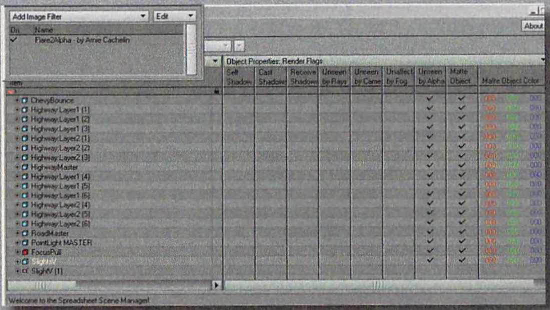

Highway_hv.lws_0173 3 (alpha) 960 x 540 8 bits
File
100%
Layer
Alpha

IMAGE 14



On	Name
✓	Flare2Alpha - by Arnie Cachelin

Item	Self Shadow	Cast Shadow	Receive Shadow	Unseen by Rays	Unseen by Came	Unaffect by Fog	Unseen by Alpha	Matte Object	Matte Object Color
ChevyBounce							✓	✓	000 000 000
Highway:Layer1 (1)							✓	✓	000 000 000
Highway:Layer1 (2)							✓	✓	000 000 000
Highway:Layer1 (3)							✓	✓	000 000 000
Highway:Layer2 (1)							✓	✓	000 000 000
Highway:Layer2 (2)							✓	✓	000 000 000
Highway:Layer2 (3)							✓	✓	000 000 000
HighwayMaster							✓	✓	000 000 000
Highway:Layer1 (4)							✓	✓	000 000 000
Highway:Layer1 (5)							✓	✓	000 000 000
Highway:Layer1 (6)							✓	✓	000 000 000
Highway:Layer2 (4)							✓	✓	000 000 000
Highway:Layer2 (5)							✓	✓	000 000 000
Highway:Layer2 (6)							✓	✓	000 000 000
RoadMaster							✓	✓	000 000 000
PointLight MASTER							✓	✓	000 000 000
FocusPull							✓	✓	000 000 000
SlightV							✓	✓	000 000 000
SlightV (1)									

Welcome to the Spreadsheet Scene Manager!

IMAGE 15

IMAGE 16

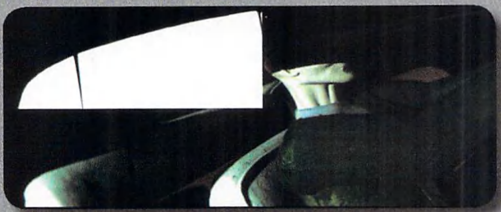


IMAGE 17

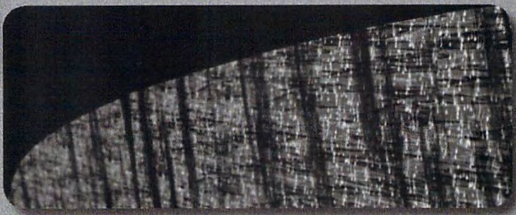
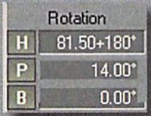


IMAGE 18



Rotation
H 81.50+180°
P 14.00°
B 0.00°

IMAGE 19

with HVs, you must make sure that volumetric antialiasing is enabled on the volumetrics tab of the effects panel. I also recommend using High AA for rendering the raindrops, as it makes for better streaks.

Now for the volumetric lighting. Starting back with our Highway_MASTER scene, we can get rid of all the foreground objects and lights in the same manner as before. Using the spreadsheet editor, we want to make the highway objects set to be matte objects, black, unseen by alpha, and not casting, self, or receiving shadows (Image 15). We will also want to clear Light (1), the cloud objects, and both banks of the regular S_Lights. Also, turn off all motion blurring and DOF options, both Camera and Filter here, unless you want to wait a very long time for the render. If you do a quick render of your scene, you should get just the volumetrics themselves, but if you look at the alpha, it comes out totally black, which won't help us when it comes time to comp them on. In order to make a volumetric have an alpha channel, you need to go to the processing tab of the effects panel and add the image filter Flare2Alpha. Try it again now, and you should get this: (Image 16)

Ok, so far this business has been a real walk in the park; now come the harder parts, like getting the windows done. To do the windows will require a total of three separate layers, so put the kettle on, and light `em if you got `em, because this is where it starts to go a bit pear-shaped.

Firstly, let's deal with the reflections. Since the killer is being lit from the same side as the window in our shot, we should be able to see some reflection of him in the glass, and I'm sure we know how time consuming that can be to render, especially if you do it included within the rest of your scene. Oh yes, and let's not forget, it's going to be subject to DOF blurring as well. May the saints preserve us and our CPUs.

Load up the Highway_k.lws scene from before, and resave it as glass_rfl.lws. Select first the chevy_interior:layer 5, this being the window geometry. From the file menu, select Replace With Object File, and choose the supplied glass_RFL.lwo. This replaces the previously transparent window with one with a reflective surface. Check its properties, and make sure that it is fully visible to both the camera and alpha, and set to receive, but not self or cast shadows. Next, crack open the ever faithful SpreadSheet and make all the other objects in the scene unseen by camera and alpha, and set them to receive, cast, and self shadow. To speed things up a little, you can reduce the render sub-patch level for both the killer and the other Chevy layers to 1. Finally, turn off camera DOF and motion blur and set the resolution to 50% with low AA and soft filter on. In the render panel, make sure that both ray trace shadows and reflection are on, and that your recursion limit is set to 2. You should see the following upon rendering: (Image 17)

It's pretty nippy too when you think about it.

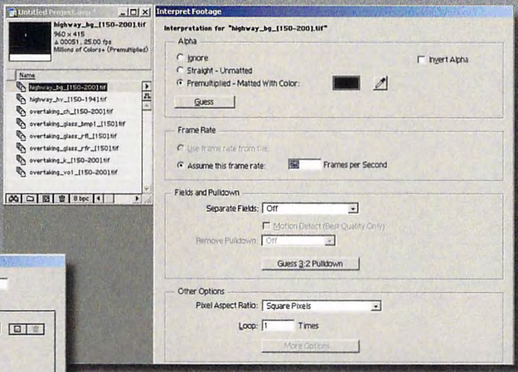
So far so good. Next in line is the refraction. We want to have the outside world we see being refracted by the raindrops running down the glass, but this is one beast of a thing to render. So, like so many parts of this shot, we are instead going to fake it in post, saving vast amounts of render time.

Re-save the scene, and call it glass_rfr.lws. You can go ahead and replace the chevy_interior:layer 1 with a null again, and get rid of the killer and the other Chevy layers (not including the glass, obviously), then proceed to replace the glass_RFL.lwo with, you guessed it, glass_RFR.lwo. You can quite happily remove all of the lights in the scene, with the exception of the last one, since it won't go, which can instead be turned down to 0%. In the Global Illumination panel, turn the ambient intensity right up to 100%, leave the camera settings as they were, and turn off all ray tracing in the Render Panel. Your render should be very quick to boot and come out like this: (Image 18)

The last piece of the puzzle is going to be the little specular highlights made by the raindrops running down the glass, and here we hit on a real problem. These drops are on the opposite side of the glass from our camera, and there's no way (that I know of, so feel free to step in, Mr. Ablan) to render the specular highlight on the opposing side of a transparent object. Methinks we're going to need a workaround (or "ugly hack," as I prefer to say).

How about this. Let's flip our lighting set up from the outside of the window, so as it's actually on the inside of the window in a mirrored set up, and then in compositing it should look pretty normal and accurate.

IMAGE 20

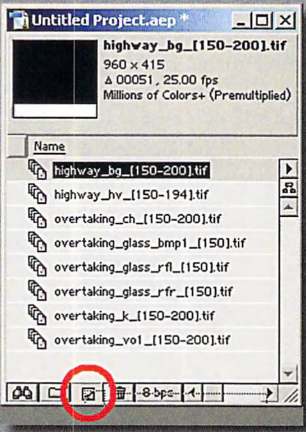


Untitled Project.aep
highway_bg_[150-200].tif
960 x 415
Δ 00051, 25.00 fps
Millions of Colors+ (Premultiplied)

Interpret Footage
Interpretation for "highway_bg_[150-200].tif"
Alpha
○ Ignore
○ Straight - Unmatted
● Premultiplied - Matted With Color:
☐ Invert Alpha
Frame Rate
○ Use frame rate from file
● Assume this frame rate: 25 Frames per Second
Fields and Pulldown
Separate Fields: Off
☐ Motion Detect (Best Quality Only)
Remove Pulldown: Off
Other Options
Pixel Aspect Ratio: Square Pixels
Loop: 1 Times

Name
highway_bg_[150-200].tif
highway_hv_[150-194].tif
overtaking_ch_[150-200].tif
overtaking_glass_bmp1_[150].tif
overtaking_glass_rfl_[150].tif
overtaking_glass_rfr_[150].tif
overtaking_k_[150-200].tif
overtaking_vo1_[150-200].tif
8 bpc
Guess
Guess 3:2 Pulldown
More Options

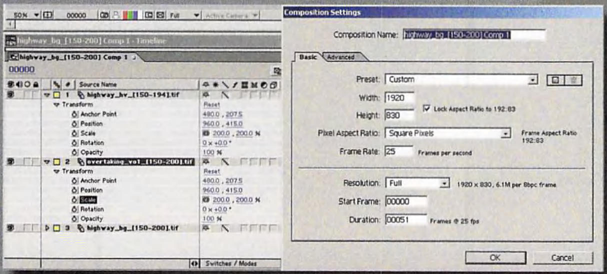
IMAGE 21



Untitled Project.aep *
highway_bg_[150-200].tif
960 x 415
Δ 00051, 25.00 fps
Millions of Colors+ (Premultiplied)

Name
highway_bg_[150-200].tif
highway_hv_[150-194].tif
overtaking_ch_[150-200].tif
overtaking_glass_bmp1_[150].tif
overtaking_glass_rfl_[150].tif
overtaking_glass_rfr_[150].tif
overtaking_k_[150-200].tif
overtaking_vo1_[150-200].tif
8 bpc

IMAGE 22



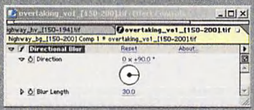
highway_bg_[150-200] Comp 1 - Timeline
highway_bg_[150-200] Comp 1
00000

1 highway_hv_[150-194].tif
Transform
Anchor Point 480.0, 207.5
Position 960.0, 415.0
Scale 200.0, 200.0 %
Rotation 0 x +0.0 °
Opacity 100 %
2 overtaking_vo1_[150-200].tif
Transform
Anchor Point 480.0, 207.5
Position 960.0, 415.0
Scale 200.0, 200.0 %
Rotation 0 x +0.0 °
Opacity 100 %
3 highway_bg_[150-200].tif

Composition Settings
Composition Name: highway_bg_[150-200] Comp 1
Preset: Custom
Width: 1920
Height: 830
☑ Lock Aspect Ratio to 192:83
Pixel Aspect Ratio: Square Pixels
Frame Aspect Ratio 192:83
Frame Rate: 25 Frames per second
Resolution: Full 1920 x 830, 6.1M per 8bpc frame
Start Frame: 00000
Duration: 00051 Frames @ 25 fps

50%
00000
Full
Active Camera
Source Name
Reset
Switches / Modes
Basic
Advanced
OK
Cancel

IMAGE 23



overtaking_vo1_[150-200].tif (Effect Controls)
highway_bg_[150-200] Comp 1 * overtaking_vo1_[150-200].tif
Directional Blur
Direction 0 x +90.0 °
Blur Length 30.0

highway_hv_[150-194].tif
overtaking_vo1_[150-200].tif
Reset
About...

IMAGE 24

So to begin. Go back to a previous scene; highway_k should do fine. Select Light(1), and in its heading parameter, type +180 after the shown value (Image 19). Isn't basic math in input fields cool? Get rid of the killer object, and the other Chevy layers except for the glass, and layer 1, which I shouldn't need to tell you we replace with a null. Our glass can be replaced with yet another new object, glass_BMP.lwo, which has the bump surface set up, oddly enough. Now not only have we flipped our moonlight around, but we don't actually need to worry about the passing streetlights, as we already have a set in place behind the camera from before … magic. I have found that the moonlight is a bit strong for this part of the render, so reduce its intensity to about 30%. Once again, turn off Camera DOF and motion blur, and all the other things that we've done in the Camera Properties, and in the Render Panel with the previous glass renders, and hit F9 once again, hopefully for the last time. You should get this sort of thing: (Image 20)

So assuming all of our renders have turned out the way they were supposed to we can happily close LightWave and proceed onto phase two, putting all of these layers together in post to get the final image. Time for a hit of Colombia's finest. Oi, I heard that — I was talking about coffee!

COMPOSITING

So onto compositing. I'm using Adobe After Effects 5.5 PB. Now, you can use the standard version of AE, but for this scene, you will require some of the more advanced functions of the production bundle. I should imagine that similar and higher-level compositors (Combustion, DFX, Shake, etc.) will be perfectly capable of the processes I'll be using, but sadly, I can't cover them all. Most of these techniques also work just fine if you're using Photoshop, but one or two steps require extra hacks (sorry work-arounds).

To begin with, we will want to compose our background. Bring the eight frame sequences into the project window. Right click on each of them in turn, and choose Interpret Footage>Main (Image 21). Set them to 25fps, with the alpha channels set to be pre-multiplied with black.

Starting with highway_bg, create a new composition by dragging the footage item onto the little make comp icon at the bottom of the project window (Image 22). On top of the background footage in the timeline, first drag the highway_vo layer, with highway_hv on top of this again. Before doing anything else, go to Composition>Composition settings, and double the resolution by checking maintain aspect ratio and changing the horizontal value to 1920px. (This brings it up to the same res at which the killer was rendered.) Click the drop down arrows on each layer in the timeline, click transform, and set their scales to 200% (Image 23). If you do a quick preview, or scrub the time slider, things should already be looking pretty good. One problem starts to show up here with the volumetric lights; no motion blur or DOF. Right click on the volumetric layer, and choose Effect>Blur and Sharpen>Directional Blur (Image 24).

Set the direction to +90 degrees with a blur length of around 30-40. Scrub now, and it should look far better.

Next, drag this composition in the project window onto the icon to make yet another comp out of it. This is called nesting, or precomposing. You can now add a dash of 1 or 2 pixel gaussian blur to this pre-composed layer just to blend it off a little.

From the project window, drag the glass_rfr item into your timeline, resize, position it below the background pre-comp, and turn off its visibility by clicking off the little eye icon (Image 25). If you're unfamiliar with AE so far, you should by this point be starting to notice the amazing similarities between working with this and the layers stack in Photoshop. After Effects is basically Photoshop for video. Yeah, I know. It's great! Right click on the nested background layer, and choose Effect>Distort>Displacement Map (Image 26). Set the Displacement Map Layer to be glass_rfr, and both the Horizontal and Vertical settings to Luminance, with a value between 5 and 10 to taste.

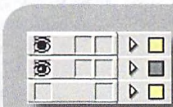
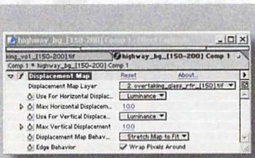


IMAGE 25

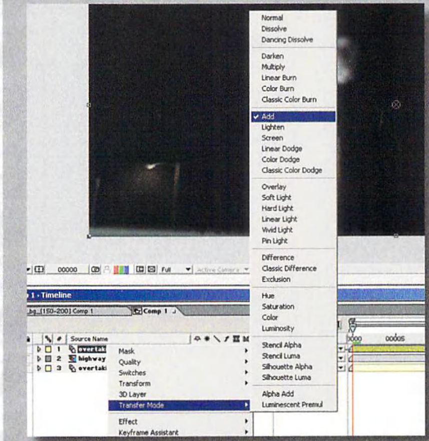


highway_bg_[150-200] Comp 1

Displacement Map Layer: 2. overtaking_glass_rfr_[150].tif
Use For Horizontal Displac...: Luminance
Max Horizontal Displacem...: 100
Use For Vertical Displace...: Luminance
Max Vertical Displacement: 100
Displacement Map Behav...: Stretch Map to Fit
Edge Behavior: ✓ Wrap Pixels Around

king_vo1_[150-200].tif
highway_bg_[150-200] Comp 1
Comp 1 * highway_bg_[150-200] Comp 1
Displacement Map
Reset
About...

IMAGE 26



Normal
Dissolve
Dancing Dissolve
Darken
Multiply
Linear Burn
Color Burn
Classic Color Burn
✓ Add
Lighten
Screen
Linear Dodge
Color Dodge
Classic Color Dodge
Overlay
Soft Light
Hard Light
Linear Light
Vivid Light
Pin Light
Difference
Classic Difference
Exclusion
Hue
Saturation
Color
Luminosity
Stencil Alpha
Stencil Luma
Silhouette Alpha
Silhouette Luma
Alpha Add
Luminescent Premul
00000
Full
Active Camera
1 · Timeline
bg_[150-200] Comp 1
Comp 1
Source Name
1 overtaki
2 highway
3 overtaki
Mask
Quality
Switches
Transform
3D Layer
Transfer Mode
Effect
Keyframe Assistant
0000
00005

IMAGE 27

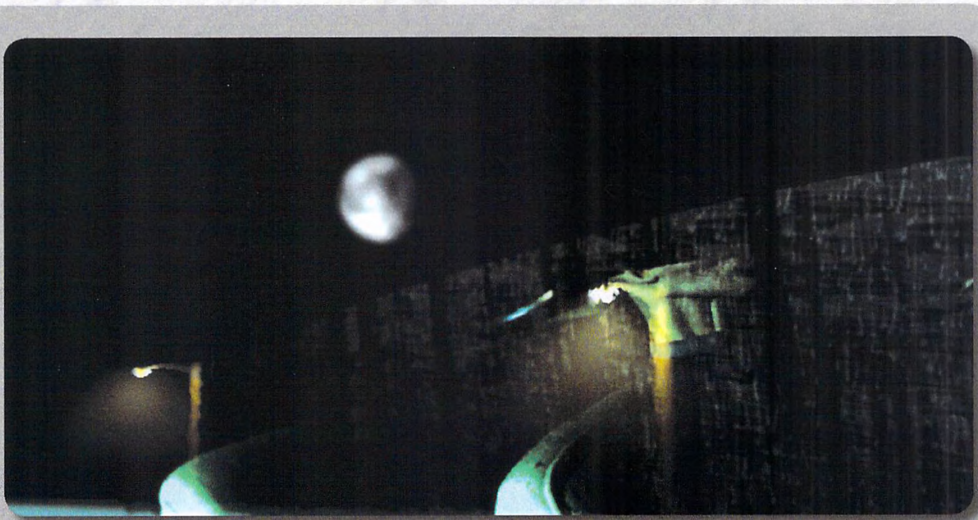


IMAGE 28

So you see, rather than waiting ages for an extremely complicated and time-consuming refraction render, we have simply generated a grayscale image that works in a similar manner to a bump map to disrupt the background, and by nesting the background composition, we are able to effect all of the layers as one. This is, of course, not physically accurate in the same was as a ray traced render is, but in many situations, you cannot spot the difference. This is a great technique that is easily adapted for a variety of uses such as vapour trails, heat signatures, water ripples, and all manner of cool, hard to achieve refraction effects. Utterly useless for adding refractions to things such as solid glass objects, but I don't hear any complaints.

Let's begin adding our foreground detail. The first layer to add on top of the background is the glass_bmp layer; again, you'll need to scale it up to 200% to make it fit the comp. And here there's another problem; it completely blacks out the background behind it. Oh dag! There are a few ways around this. For precise control over the visibility of the raindrops on the glass you can opt for using a Luma Matte with a Matte Choker, but I prefer to keep things simple, so right click on the bmp layer, and go to Transfer Mode>Add (Image 27).

Add (or screen) works by adding the value of a pixel to the value of the one directly underneath it. Because of this, black pixels (value 0,0,0) become transparent. You may wish (as I have) to go to the transform settings for this layer, and play a little with its opacity setting. I've also added a levels effect to the layer just to bring it completely in line with the look I'm after.

Next comes the reflection layer, again scaled up. Once again we change it to be additive and play a little with its opacity and levels to get it just so. I also do the displacement trick to this reflection layer, with a setting of around 1 pixel, just to tie it into the rain a touch further. You should by this stage have something very nice looking, roughly like this: (Image 28)

If you do a RAM Preview you can see how well the whole thing is knitting together. I always prefer to make sure all my background layers are coming together properly before I add the foreground ones, because once they come into play, your attention to detail can easily shift away from the background, so get that perfect to begin with.

Lastly, add the highway_ch layer, scale it up, and then the highway_k at the very top

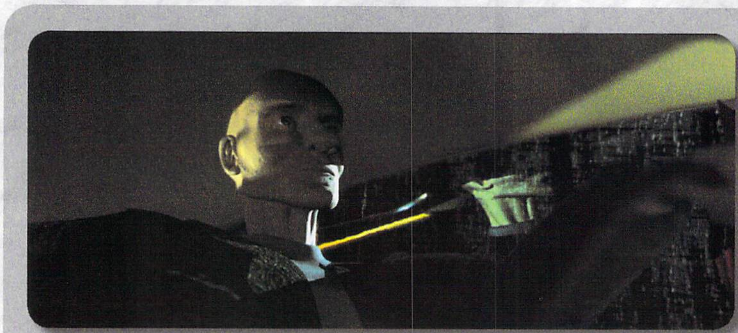


IMAGE 39

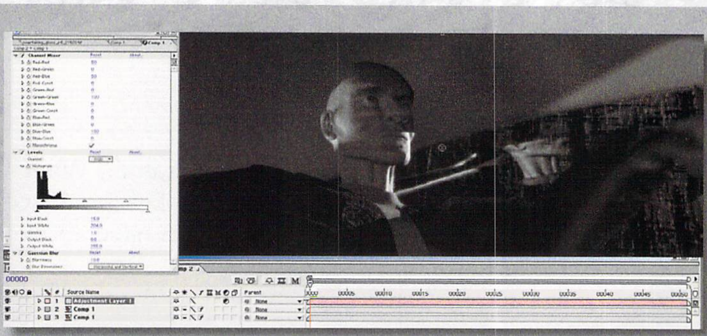


IMAGE 30

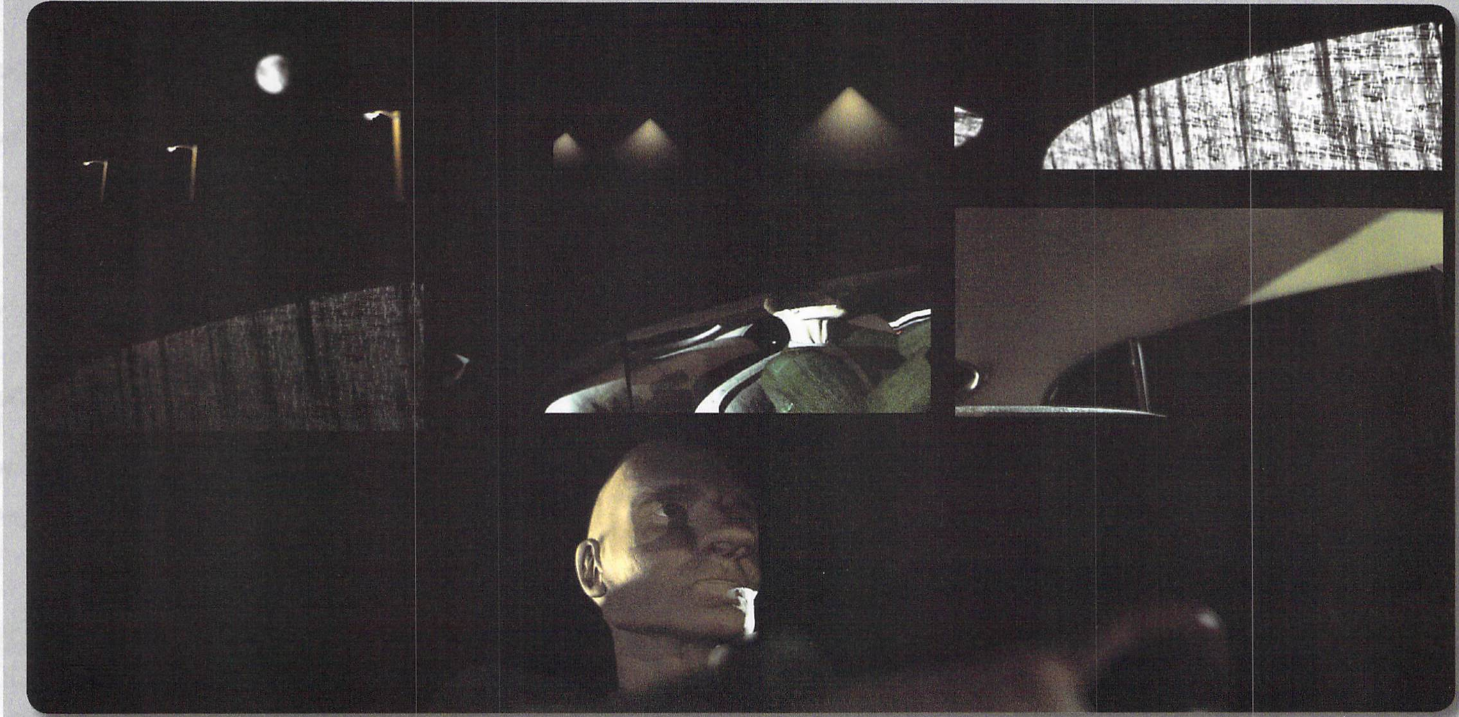


IMAGE 31

of the stack. You may want to give their individual levels and whatnot a minor tweak just to bring the whole thing together (Image 29). If you want to go the whole way into black and white as I have, simply nest this completed composition into a new one, and apply the channel mixer filter using, as a rough guide, 50% red, and 50% blue, with monochrome checked. I've also duplicated the layer, added some blur and screened it for diffusion, and a final adjustment layer just to add grain and fine tune the contrast with levels (Image 30).

Whatever you decide to do with the final look, set all of the layers to best quality by switching the quality toggles, and do a final RAM Preview. Looks pretty good, doesn't it? All those artifacts are gone, the renders have completed in record time, and we have even achieved one or two effects that would be either very difficult or even impossible to pull off in LightWave alone.

Hopefully now you can see why it's so important to know how the shot should look before rendering a single frame, often before even creating the scene. Having a clear picture of things to begin with helps enormously in picking out the different elements of the shot (Image 31), and from there it all boils down to knowing which techniques to apply to which pieces. That said, there is no substitute for experimentation.

HAPPY FILMMAKING.

CRAIG MONINS HAILS FROM JERSEY, AND IS A HYBRID FREELANCER/ FILMMAKER. WHILST HE CONSIDERS HIMSELF BOTH KNOWLEDGEABLE AND PROFESSIONAL IN HIS 3D WORK, MANY AROUND HIM JUST SHAKE THEIR HEADS AND CALL HIM BANANAS. HIS LATEST CREATIVE TRAIN-WRECK, FROM WHICH THIS EXAMPLE IS TAKEN, CAN BE VIEWED AT WWW.REBELHILL.BIZZYNESS.COM. ANY QUESTIONS, COMMENTS, ABUSE, OR ROTTEN VEG YOU HAVE CAN BE HURLED AT CSMONINS@HOTMAIL.COM.

PROTECTING YOUR PROPERTY

INTERVIEW: MATT GREENBERG

BY ABBY PIPER

Matt Greenberg has been a big asset to the Grubman, Indursky and Schindler P.C. *law firm for over 15 years. He has a lot of experience and knows his way around the block in entertainment law. His dedication allowed him to graduate at the top of his class as a Magna Cum Laude graduate of Cardozo School of Law in New York City. Matt represents some of the top clients in music, film and television. He has taken time with Keyframe Magazine to discuss intellectual property and protecting intellectual property.*

Keyframe: As an entertainment lawyer, what do you do on a regular basis?

Matt: I advise clients with respect to their rights and entertainment property. I work on personal service contracts and negotiating agreements for exploitation of clients' services. I also do introductions, on behalf of the client, to other people in the entertainment industry who would have an interest in working together.

Keyframe: What would you suggest are the first steps that an artist should take to protect their property?

Matt: It depends on the type of property. Most works are protected by copyright. Even though getting a copyright is helpful, it's not a strong safeguard. You can get a trademark registration, which is stronger than copyright. Of course, there's a string attached when you upgrade. A trademark registration is harder to obtain than copyright. A patent, which pertains to a process, idea or service, would be another route to start. Again, it really depends on the type of property a person wants to protect. Basically, copyrights and trademarks are the main kinds of protection in the entertainment business. Patents would also be used in the gaming industry because of the inventions.

Keyframe: What are some common mistakes or misconceptions that your artists have about legal protection?

Matt: A common misconception is [the idea that] using a small amount of protection is a fair amount and they don't need to get more protection. And a common mistake is not negotiating all material terms of agreements; therefore, not having an agreement that's in place or an agreement period.

Keyframe: What is copyright in simple terms?

Matt: Copyright is a property right recognized by the federal government used by a creator or employer of the creator of original works of expression.

Keyframe: Okay, here's a simple one. Hehehe. Can anyone get a copyright?

Matt: Hehehe. Yes, anyone can get a copyright.

Keyframe: Can you explain the difference between a trademark and copyright?

Matt: A trademark is a property right and an exclusive right to use a particular word or phrase to represent a particular source of goods and services. Copyright is a property right of original works of expression.

Keyframe: Is it always necessary to register a trademark?

Matt: No, not necessarily. You acquire rights through use, not registration.

Keyframe: Does the "poor man's copyright" work when you mail a sealed copy of the property without opening the envelope?

Matt: Yes, but you're better off if a copyright is used. The poor man's copyright is useful in a sense that you can introduce evidence of the date of the existence of the work. A copyright would be better because it shows the date when the work existed and it provides a public record. Someone can find information in a public place if they want to know what already exists.

Keyframe: As a property evolves, should the owner do additional copyrights/ trademarks?

Matt: Yes. It's plain and simple.

Keyframe: Can a person still take someone to court for stealing their ideas if they don't have a copyright? Why or why not?

Matt: In some circumstances. It depends if the idea or work is copyrightable. If it's not copyrightable, then you can't steal it. Hehehe.

Keyframe: At what point is a similar work or property an infringement on another person's copyright or trademark?

Matt: There are two standards. In copyright, the standards are substantial similarity of the new work compared to the original work and access to the copyrighted work. In trademark, it's the likelihood of confusion in the marketplace.

Keyframe: Well, Matt, thank you for speaking with us. Have a good day.

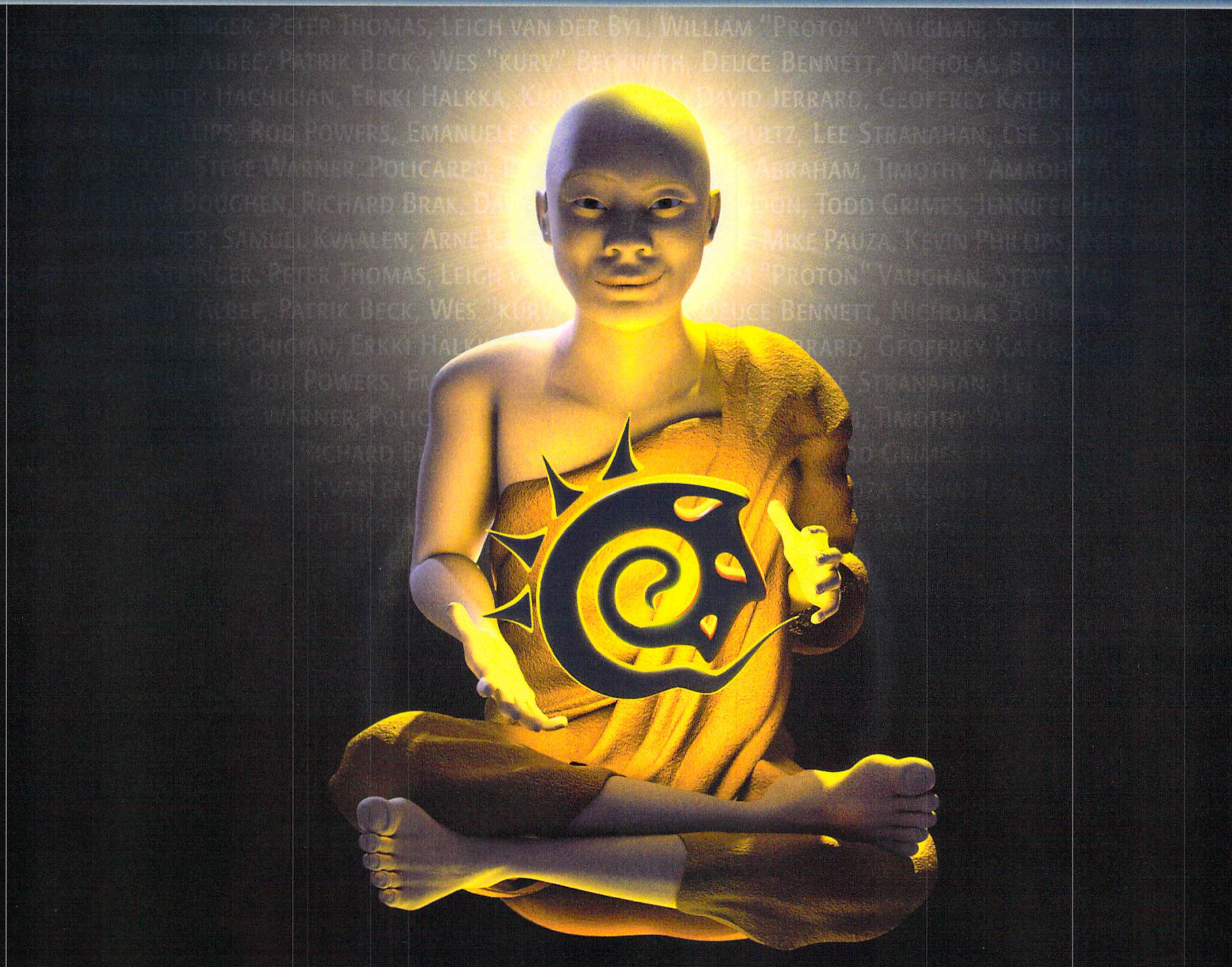
Matt: Okay, Abby. Thank you.

You may contact Matthew Greenberg at mgreenberg@gispc.com

ABBY PIPER IS FROM NEW YORK CITY. SHE IS A COLLEGE GRADUATE WITH A BACHELOR'S IN JOURNALISM. SHE IS A FREELANCE WRITER AND HAS BEEN WORKING IN NEW YORK FOR THE PAST COUPLE OF YEARS. ABBY'S FOCUS IS IN THE ANIMATION AND ENTERTAINMENT INDUSTRY. SHE IS CURRENTLY FREELANCING WITH THREE PR COMPANIES.

LightWave 3D 8

1001 Tips & Tricks


Peter Thomas, Leigh van der Byl, William "Proton" Vaughan, Steve
Albee, Patrik Beck, Wes "kurv" Beckwith, Deuce Bennett, Nicholas Bou
Jennifer Hachigian, Erkki Halkka, David Jerrard, Geoffrey Kater
Phillips, Rob Powers, Emanuele, Lee Stranahan, Lee
Steve Warner, Policarpo, Abraham, Timothy "Amadh
Boughen, Richard Brak, Todd Grimes, Jennifer Hach
Samuel Kvaalen, Arne, Mike Pauza, Kevin Phillips

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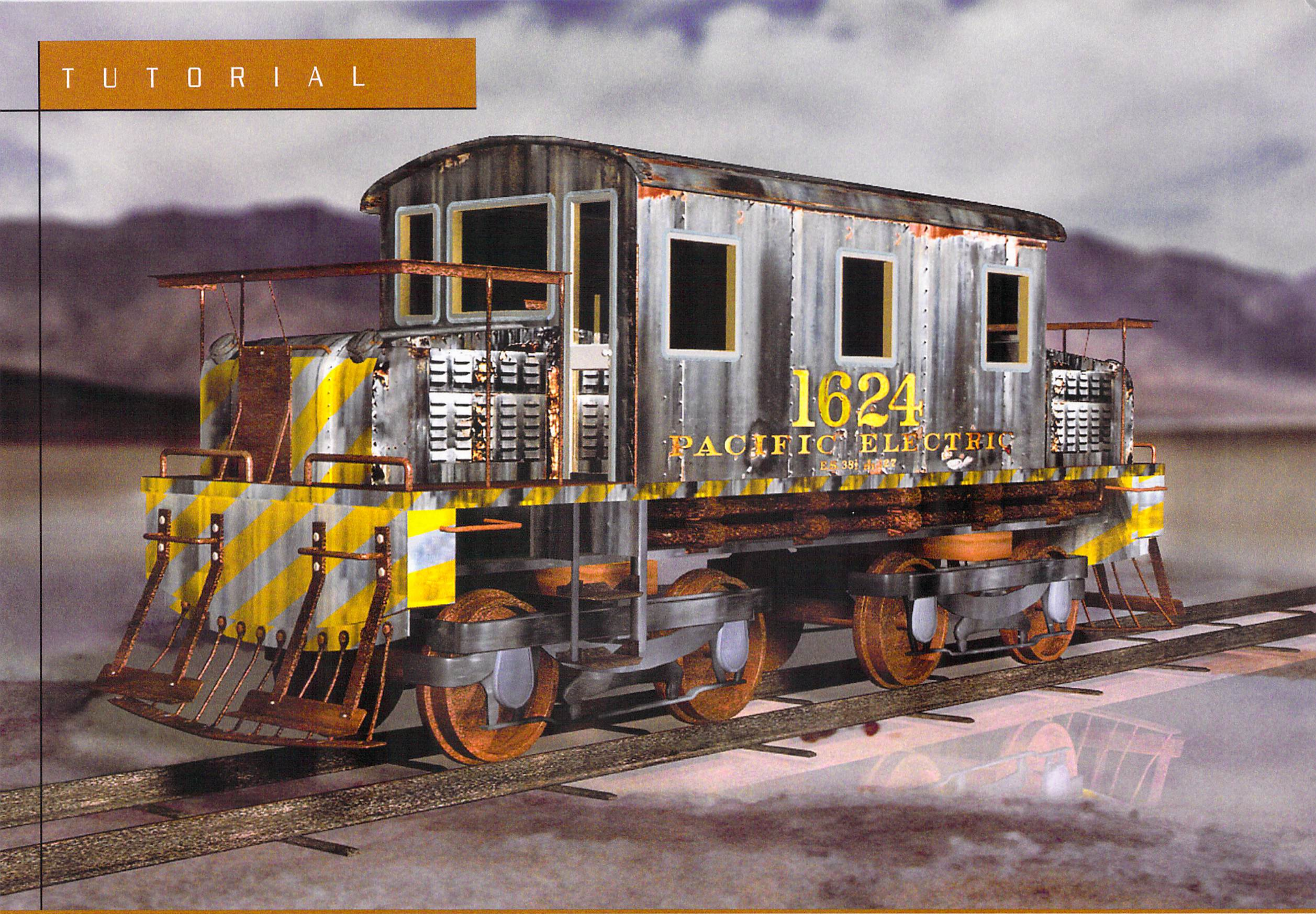


PHOTOSHOP TEXTURES

BY STEPHEN M. BURNS

RETIRED BEAUTIES

In Southern California, we have so much beautiful weather. In fact, as I am writing this article, the temperature is around 95 degrees and most people would be heading for the beach; that's not for me. As a photographer, I would rather avoid the crowds of people, going instead to out of the way places to take pictures. That is just what I did for this tutorial. As a result of avoiding the crowds, I went to some of my favorite hidden places to photograph…weather-torn trains and trolleys. In terms of the location being rich with textures, I was in heaven. With a Nikon D1X (5 megapixel camera) set at 125 ISO, I shot all of the images in RAW mode to Maximize the tonal and color information that is recorded in the digital image. Due to the large file sizes, which is the nature of the RAW format, I used a 1 gigabyte flash card to capture as many photographs as possible.

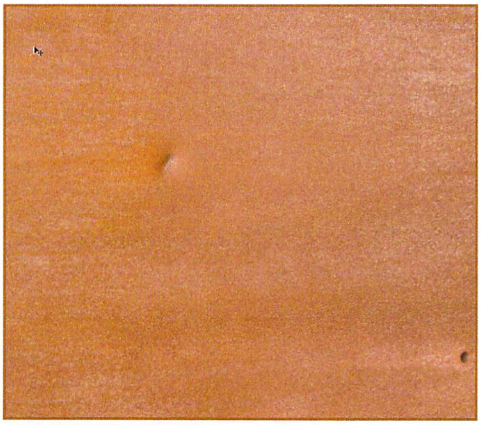
After making close inspection of my photos, I realized that there were three main areas that seemed to make up the bulk of the train's character. There are the wheels and pipes, which have a rusted metal character, the body of the train, which has the dilapidated paint textures, and finally, the painted strips on the nose and side of the train.

RUSTING AWAY

In Issue 38, I demonstrated how to create custom rust texture from scratch; however, when it comes to achieving realism, there is no better substitute than using photographic imagery as the basis for surfacing models in LightWave.

STEP 1

I began by taking a close up shot of a rusting panel.



CLOSE UP PHOTO OF RUSTY PANEL

STEP 2

The image itself, in my opinion, did not have enough depth and character, but before taking steps to alter it, I needed to make it a texture that would tile. By accessing the Image Size menu (image>adjust>image size), I made the texture 5"x5" square. Since my original photo was captured at 300 PPI (Pixels Per Inch), I worked at this resolution to give me the best results. Later it can be reduced as needed for production purposes.

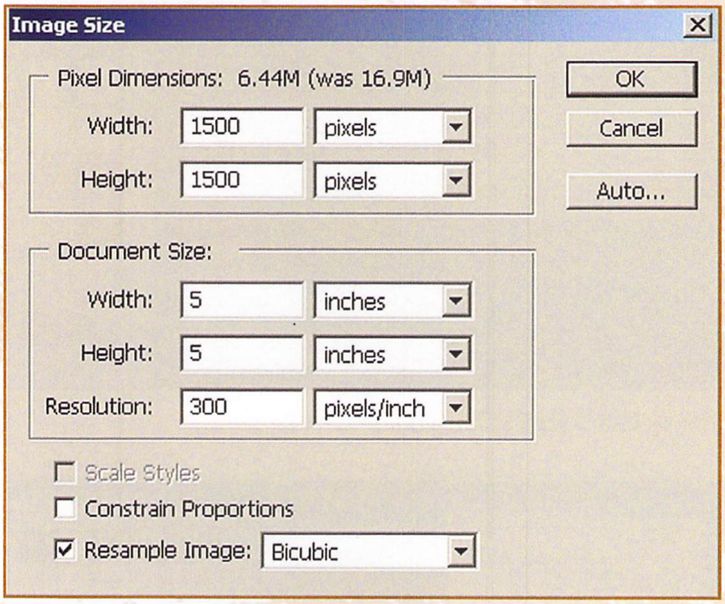


Image Size

Pixel Dimensions: 6.44M (was 16.9M)

Width: 1500 pixels

Height: 1500 pixels

Document Size:

Width: 5 inches

Height: 5 inches

Resolution: 300 pixels/inch

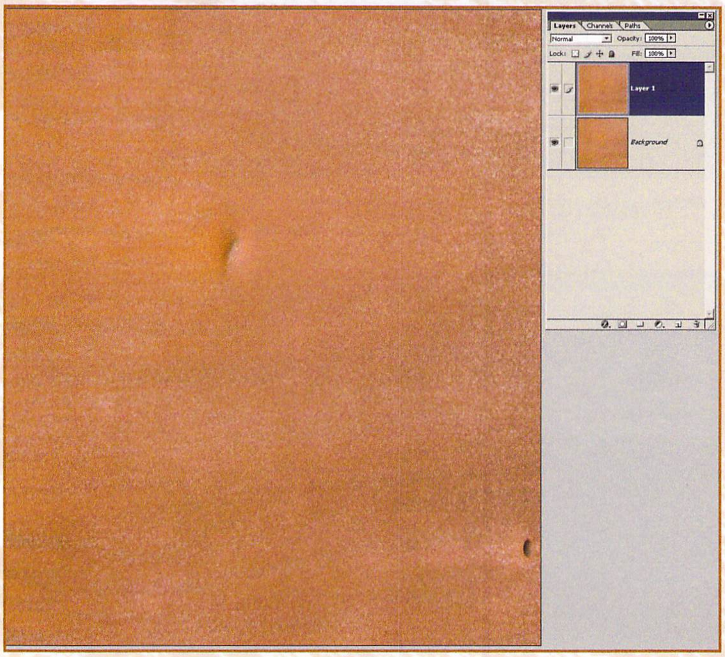
☐ Scale Styles

☐ Constrain Proportions

☑ Resample Image: Bicubic

OK
Cancel
Auto...

CLOSE UP PHOTO OF RUSTY PANEL

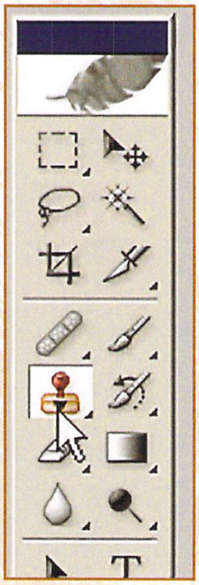


Layers
Channels
Paths
Normal
Opacity: 100%
Fill: 100%
Layer 1
Background

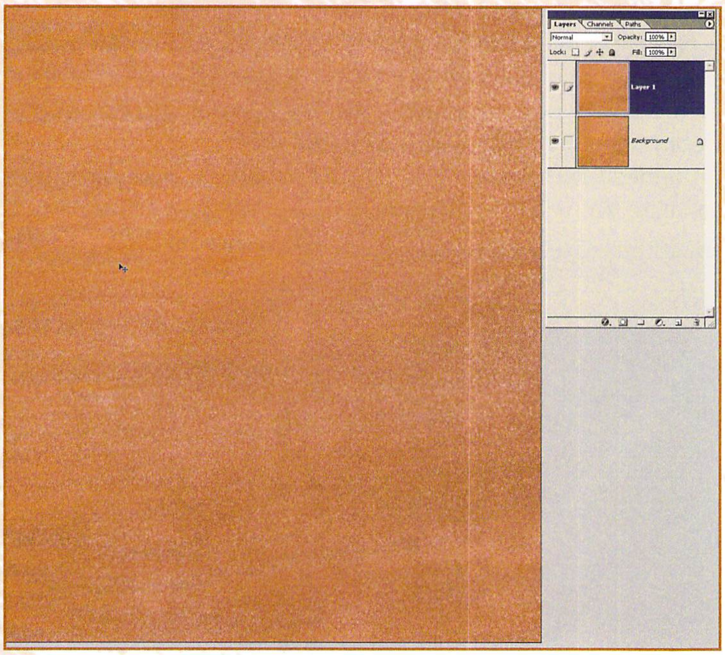
CLOSE UP PHOTO OF RUSTY PANEL

STEP 3

Moving forward, I duplicated my layer (Ctrl J) so that the original would remain untouched. I noticed certain indentations in the metal that could be visually redundant if the image was tiled. So, by accessing my Clone Stamp tool, I sampled with an ALT-Click on that area of the image that I wanted as a texture and painted that texture over the imperfections.



THE CLONE STAMP TOOL

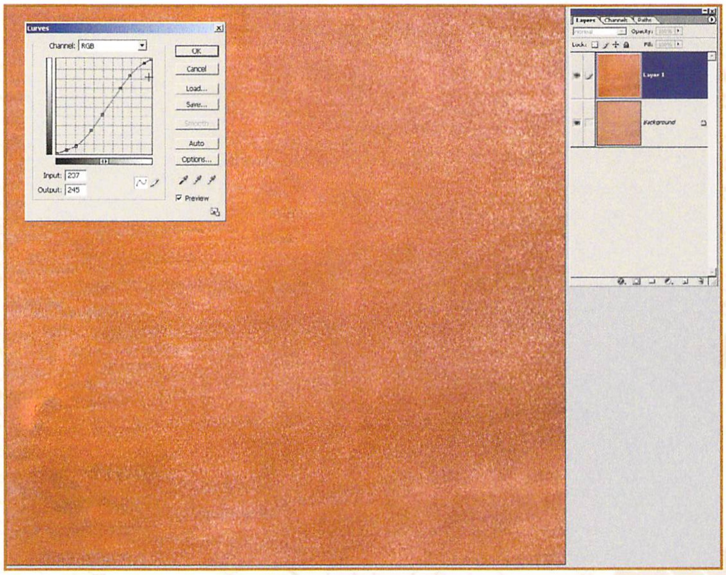


Layers
Channels
Paths
Normal
Opacity: 100%
Fill: 100%
Layer 1
Background

RUST TEXTURE WITH DENTS REMOVED

STEP 4

After achieving some uniformity, the texture was ready to be enhanced. By accessing the Curves menu (image>adjust>curves), the spline was adjusted so that the lower tonalities to the lower right were allowed to appear more rich and the higher tonalities in the upper right were given more sparkle. The Curves tool is wonderful for both contrast and tonal adjustments. Remember that you are working in an 8-bit program for the most part and you have access to 256 shades of gray per color channel, which happens to Red, Green and Blue. Through Curves, you have the ability to alter all 256 shades of gray in each of your channels.

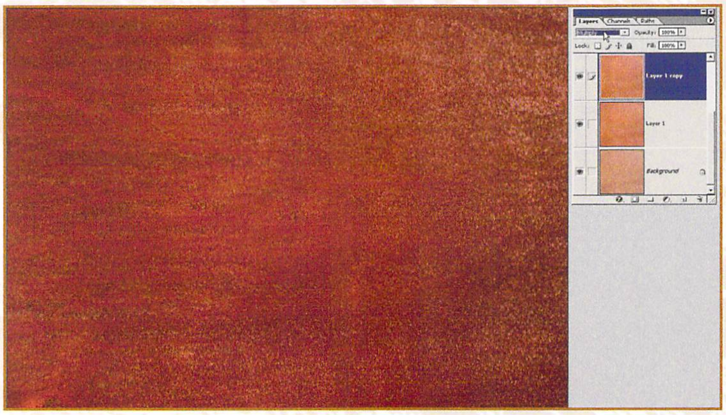

Curves
OK
Cancel
Load...
Save...
Smooth
Auto
Options...
Preview
Layers
Channels
Paths
Layer 1
Background

Channel: RGB
Input: 207
Output: 245

RUST TEXTURE UTILIZING CURVES TO CONTROL COLOR

STEP 5

Now let's do something really fun. By duplicating my layer yet once again and setting the blending mode (top left corner of the layers palette) to Multiply, the texture gained greater depth. Although this was intriguing, the effect also gave off an undesirable reddish cast. So, let's work on neutralizing its tonality. We will use adjustment layers to achieve this.

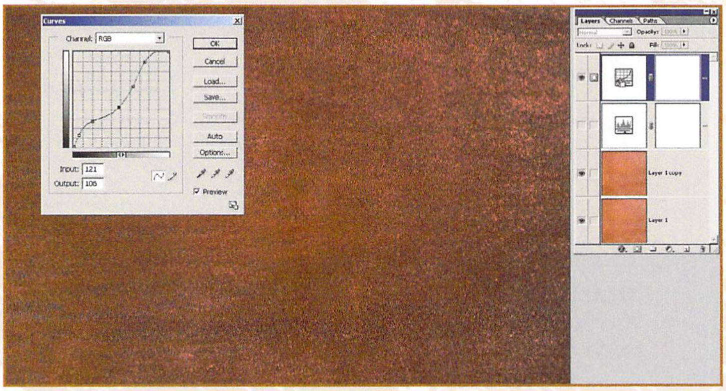

Layers
Channels
Paths
Layer 1 copy
Layer 1
Background

Opacity: 100%
Fill: 100%

RUST TEXTURE UTILIZING CURVES TO CONTROL COLOR

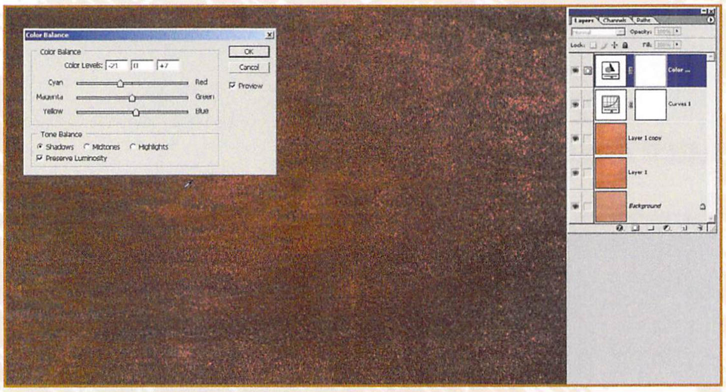
STEP 6

The nature of adjustment layers is such that they will affect all of the layers beneath them simultaneously. To access them, click on the black & white half circle at the bottom of the layers palette. I chose the Curves adjustment layer (See image: Step6a) to add greater depth to the texture. The color was neutralized with the Color Balance adjustment layer (See image: Step6b). Finally, the Levels adjustment layer added a little more luminance to the texture (See image: Step6c). Now the image is ready to be altered into a tiling texture.


Curves
OK
Cancel
Load...
Save...
Smooth
Auto
Options...
Preview
Layers
Channels
Paths
Layer 1 copy
Layer 1

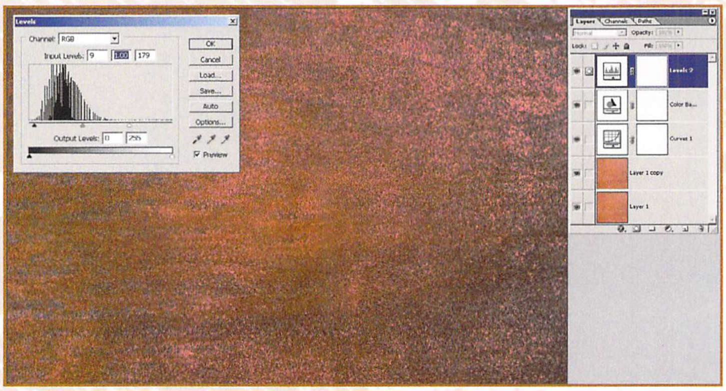
Channel: RGB
Input: 121
Output: 106

STEP 6A–CURVES ADJUSTMENT LAYER


Color Balance
OK
Cancel
Preview
Cyan
Red
Magenta
Green
Yellow
Blue
Layers
Channels
Paths
Color ...
Curves 1
Layer 1 copy
Layer 1
Background

Color Balance
Color Levels: -21 0 +7
Tone Balance
● Shadows ○ Midtones ○ Highlights
☑ Preserve Luminosity

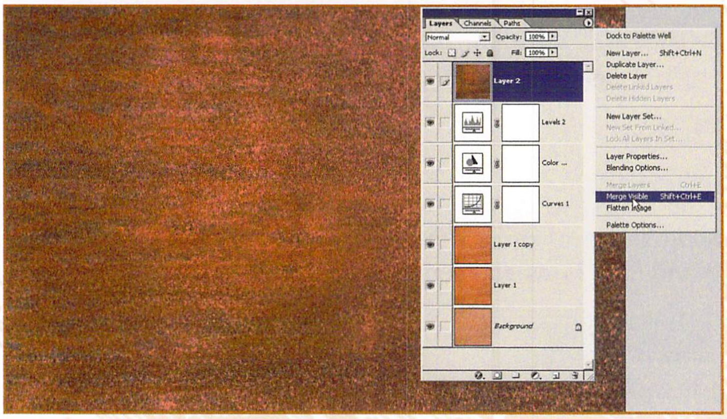
STEP 6B–USING THE COLOR BALANCE ADJUSTMENT LAYER


Levels
OK
Cancel
Load...
Save...
Auto
Options...
Preview
Layers
Channels
Paths
Levels 2
Color Ba...
Curves 1
Layer 1 copy
Layer 1

Channel: RGB
Input Levels: 9 1.00 179
Output Levels: 0 255

STEP 6C–LEVELS ADJUSTMENT

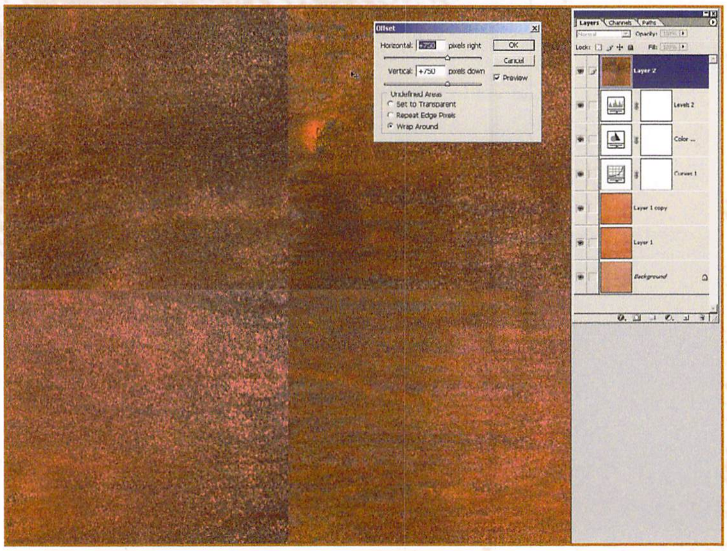
We will begin by merging all of the layers into a single layer without flattening the file. Start by creating a new layer on top of the existing layers. Hold down the ALT key on the keyboard, access the layers drop menu on the top right corner of the layers palette and click Merge Visible. Now we can work on one complete layer to create our tile image.


Layers
Channels
Paths
Normal
Opacity: 100%
Lock:
Fill: 100%
Layer 2
Levels 2
Color ...
Curves 1
Layer 1 copy
Layer 1
Background
Dock to Palette Well
New Layer... Shift+Ctrl+N
Duplicate Layer...
Delete Layer
Delete Linked Layers
Delete Hidden Layers
New Layer Set...
New Set From Linked...
Lock All Layers In Set...
Layer Properties...
Blending Options...
Merge Layers Ctrl+E
Merge Visible Shift+Ctrl+E
Flatten Image
Palette Options...

MERGE VISIBLE LAYERS TO CREATE ONE FINISHED LAYER FOR TILING

STEP 7

The Image Size menu (image>adjustment>image size) tells me that the image is 1500 X 1500 pixels. I want to see exactly how the outer edges of the tile will interact with itself. So by accessing the Filters> Offset I give an offset of 750 pixels (half the size of the file) in the width and height to split the image in half (See image: Step7a). You will see the seams in your image. What we want to do is clone out the seams to make the texture look like one continuous flowing piece. Now we are in a good situation to use Photoshop's Healing Brush tool. Use it the same way as the Clone Stamp tool; however, this one will blend the two textures. This gives us all kinds of creative possibilities. Just blend the textures until you no longer see the seams. Finally, add some Unsharp Mask (filters>sharpen>unsharp mask) and save your image.


Offset

Horizontal: +750 pixels right

Vertical: +750 pixels down

☑ Preview

Undefined Areas

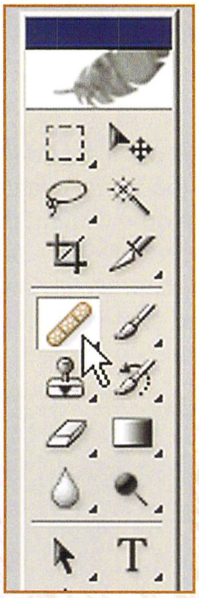
○ Set to Transparent

○ Repeat Edge Pixels

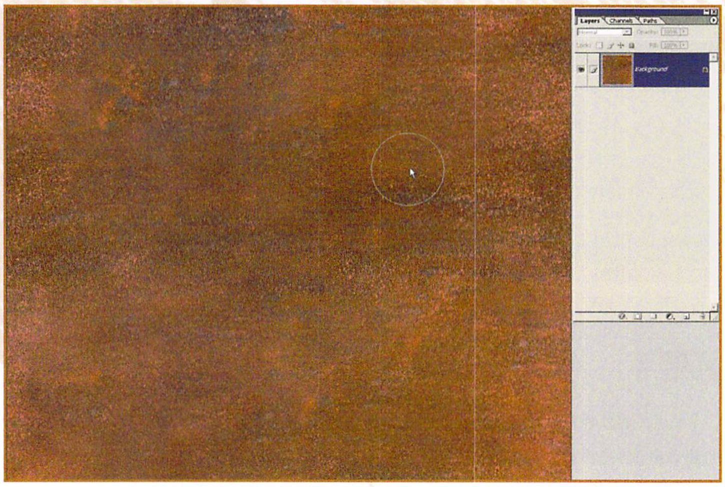
● Wrap Around

OK
Cancel
Layers
Channels
Paths
Layer 2
Levels 2
Color ...
Curves 1
Layer 1 copy
Layer 1
Background

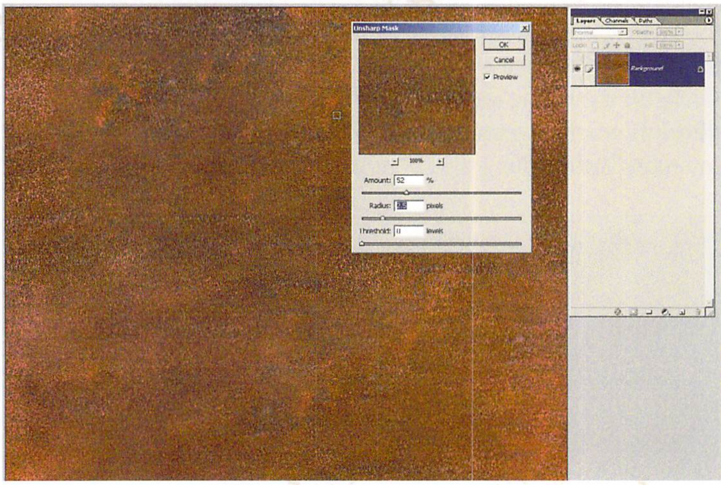
STEP 7A–OFFSET SETTINGS. NOTE THE VISIBLE SEAMS



PHOTOSHOP'S HEALING TOOL


Layers
Channels
Paths
Background

HEALING TOOL BLENDING THE SEAMS


Unsharp Mask

Amount: 52 %

Radius: 0.5 pixels

Threshold: 11 levels

☑ Preview

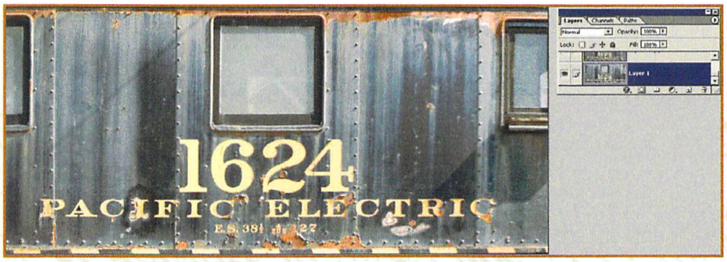
OK
Cancel
100%
Layers
Channels
Paths
Background

UNSHARP MASK APPLIED TO ACCENTUATE TEXTURE

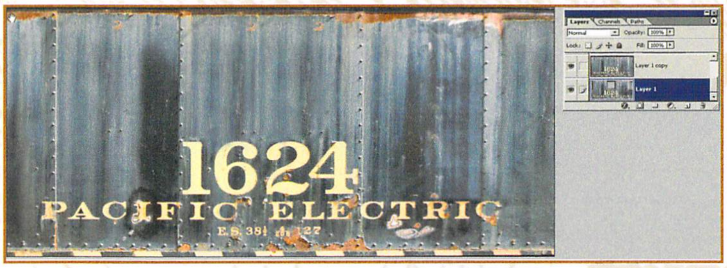
THE MAIN BODY

STEP 1

The image below is the original photo of the side of our train. Since the windows are modeled separately, we needed an image that had continual texture without the window detail. Using my rectangular Marquee tool with a slight feather, I selected large portions of the adjacent panels and pasted them onto the windows. Finally, I added some touch up with the Clone Stamp tool to clean up any inconsistent edges.


Layers
Channels
Paths
Normal
Opacity: 100%
Lock:
Fill: 100%
Layer 1

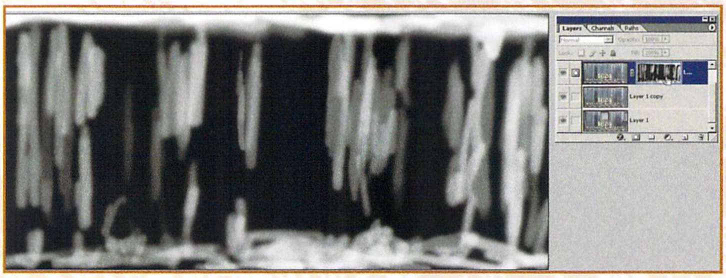
ORIGINAL PHOTO OF TRAIN SIDE


Layers
Channels
Paths
Normal
Opacity: 100%
Lock:
Fill: 100%
Layer 1 copy
Layer 1

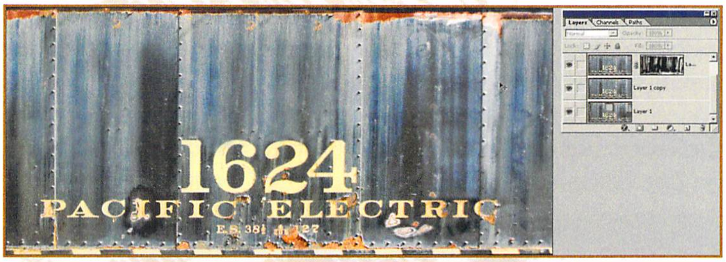
TRAIN SIDE WITH WINDOWS REMOVED

STEP 2

I wanted to add a little more character to the image . Duplicating the layer and giving it a layer blend mode of hard light did the trick; however, it was so strong that it needed to be restricted to certain areas of the image. Clicking on the 2nd from the left icon at the bottom of the layers palette while pressing the ALT key gave me a layer mask filled with black. This will block the effects of the layer with the hard light blend mode. To continue editing the mask, we will click the mask next to image layer. By painting with white on the mask, we can allow the effects of the layer to show through where we want. The image below shows the results of my mask after editing and Image: (Step2a) shows the final result.


Layers
Channels
Paths
Layer 1 copy
Layer 1

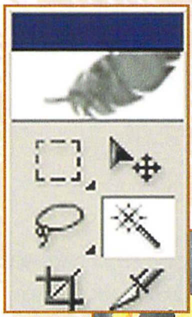
EDITED MASK


Layers
Channels
Paths
Layer 1 copy
Layer 1

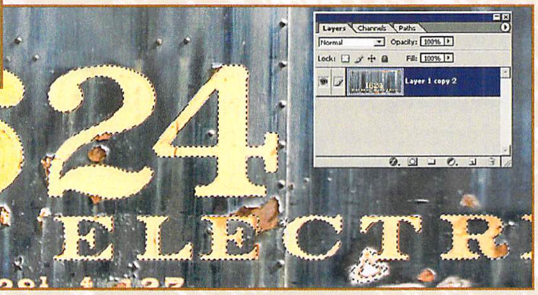
STEP 2A–TRAIN SIDE WITH MASK APPLIED

STEP 3

All I want to do now is give it a little more attention and bring out the text on the texture. By accessing the Magic Wand tool, I was able to select the yellow text.



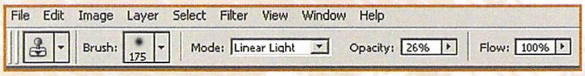
MAGIC WAND TOOL


Layers
Channels
Paths
Normal
Opacity: 100%
Lock:
Fill: 100%
Layer 1 copy 2

TEXT SELECTED VIA THE MAGIC WAND

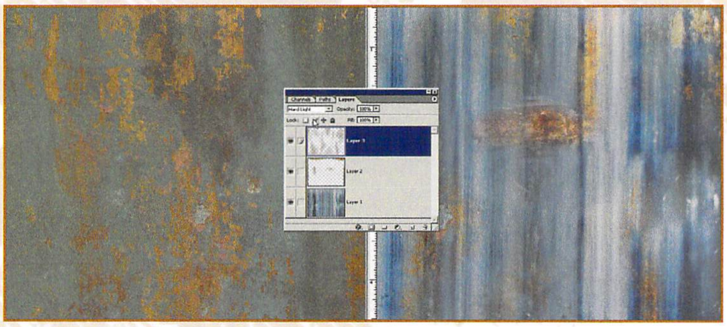
STEP 4

In addition, I added a little more texture by using another image to clone its texture on top of my original Train Body map and giving my Rubber Stamp tool a blending mode of Linear light.


File
Edit
Image
Layer
Select
Filter
View
Window
Help

Brush: 175
Mode: Linear Light
Opacity: 26%
Flow: 100%

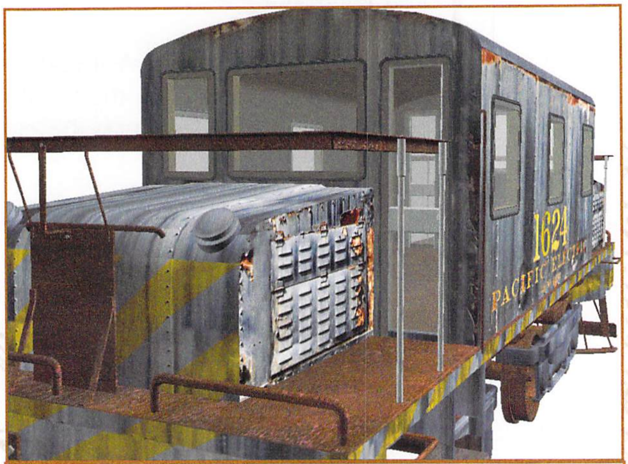
RUBBER STAMP TOOL BLENDING MODE ON LINEAR LIGHT

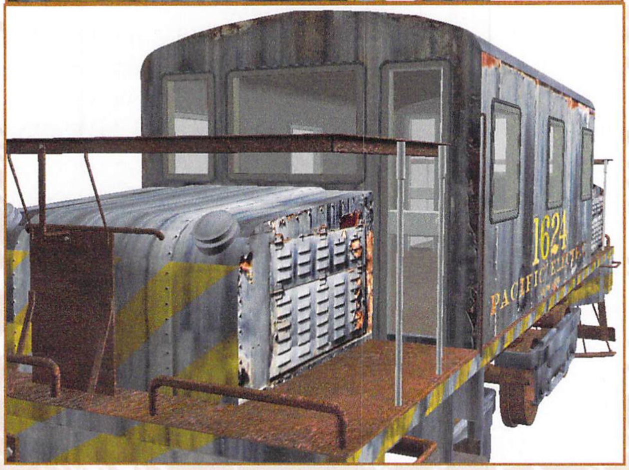

Channels
Paths
Layers
Layer 3
Layer 2
Layer 1

ADDITIONAL TEXTURING IMAGE

With a before and after quick render I can see the results:

BEFORE

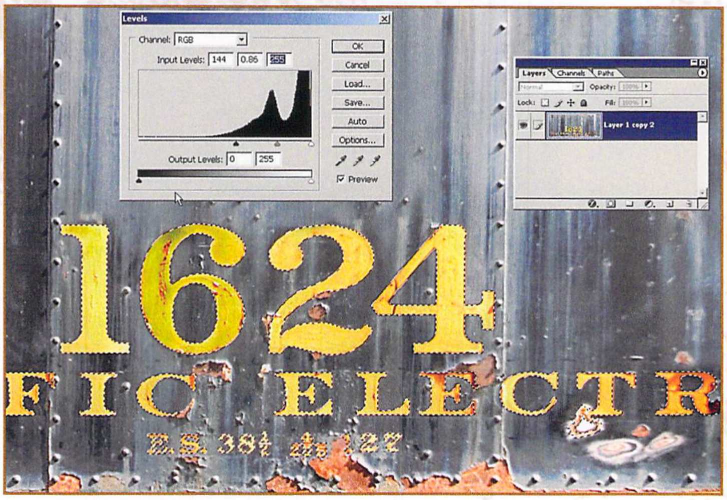

1624
PACIFIC ELECTRIC


1624
PACIFIC ELECTRIC

AFTER

STEP 5

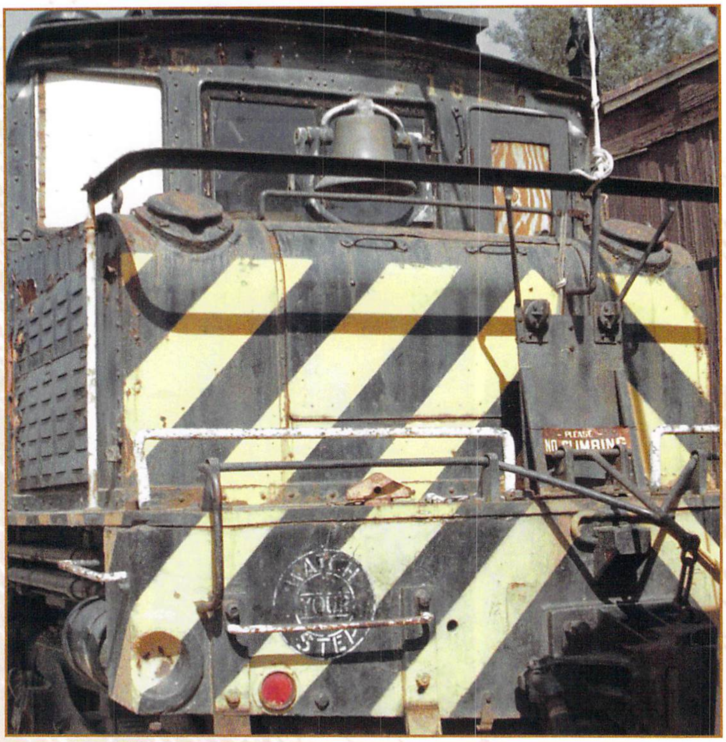
By accessing Levels, we can now adjust the tonality of the selected text to bring out its texture. Don't forget to give it some Unsharp Mask (filters>sharpen>unsharp mask).


Levels
Channel: RGB
Input Levels: 144 0.86 255
Output Levels: 0 255
☑ Preview
Layer 1 copy 2
OK
Cancel
Load...
Save...
Auto
Options...
Layers
Channels
Paths
Opacity:
Lock:
Fill:
1624
FIC ELECTR
E.S. 38

ADDITIONAL TEXTURING IMAGE

Creating Texture For The Nose Of The Train

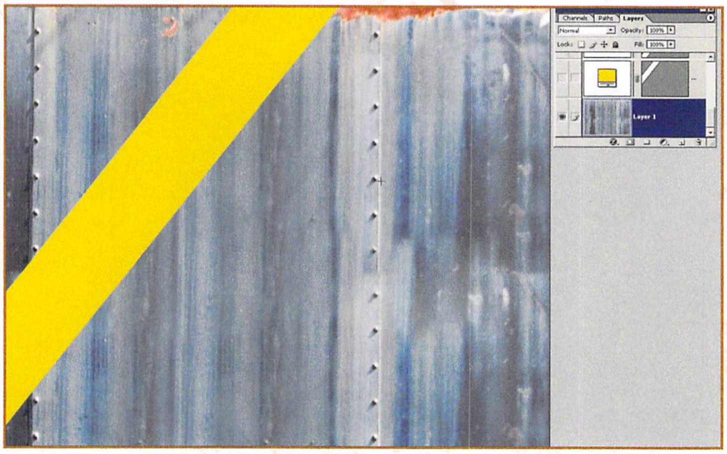
While taking reference photos, it was difficult for me to get straight on shots of all of the textures that I needed, so I had to improvise in Photoshop. This is one of those situations. Using my original as a guide, I began to work.


PLEASE
NO CLIMBING
WATCH
YOUR
STEP

ORIGINAL REFERENCE IMAGE OF TRAIN NOSE

STEP 1

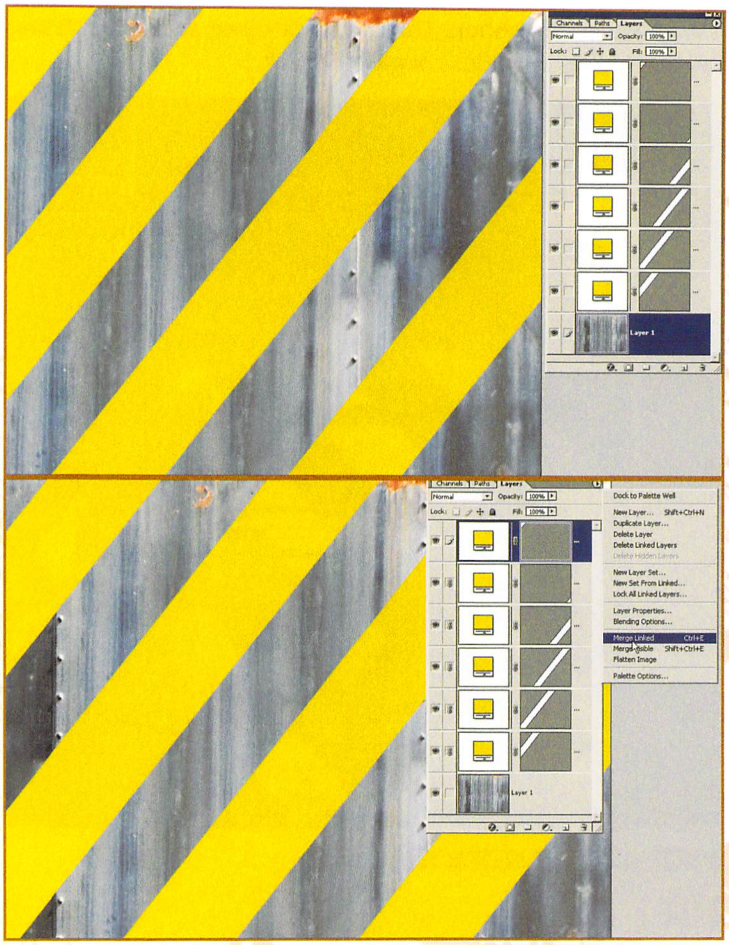
Using the Clone Stamp tools and techniques mentioned in steps 1-4 for the main body, the base image was constructed. In a separate layer, the rectangular vector tool with a yellow foreground was resized and angled diagonally at approximately 45 degrees.


Normal
Opacity: 100%
Fill: 100%
Layer 1
Channels
Paths
Layers
Lock:

YELLOW DIAGONAL STRIPES ADDED OVER TEXTURE FOR NOSE

STEP 2

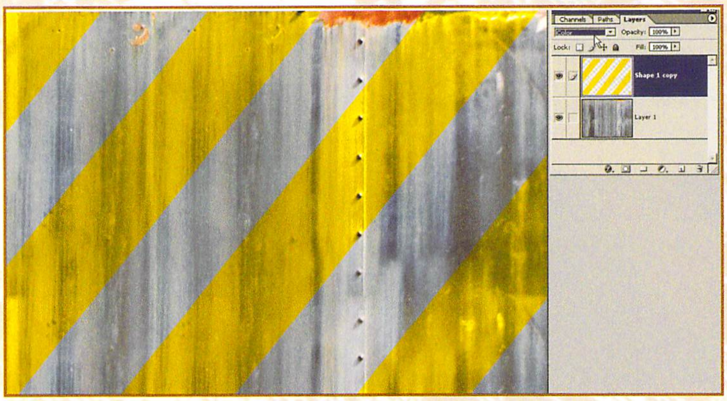
Next the yellow stripe layer was duplicated and positioned accordingly, linked together and then merged.


Channels
Paths
Layers
Normal
Opacity: 100%
Lock:
Fill: 100%
Layer 1
Dock to Palette Well
New Layer... Shift+Ctrl+N
Duplicate Layer...
Delete Layer
Delete Linked Layers
Delete Hidden Layers
New Layer Set...
New Set From Linked...
Lock All Linked Layers...
Layer Properties...
Blending Options...
Merge Linked Ctrl+E
Merge Visible Shift+Ctrl+E
Flatten Image
Palette Options...

YELLOW STRIPES LINKED (TOP) AND MERGED INTO A SINGLE LAYER (ABOVE)

STEP 3

Once the stripes are merged, we will give it a blending mode to integrate the stripes with the background texture. The color mode is perfect for this. It will allow the yellow lines to tint the background, making it look as if it was painted on.


Channels
Paths
Layers
Color
Opacity: 100%
Lock:
Fill: 100%
Shape 1 copy
Layer 1

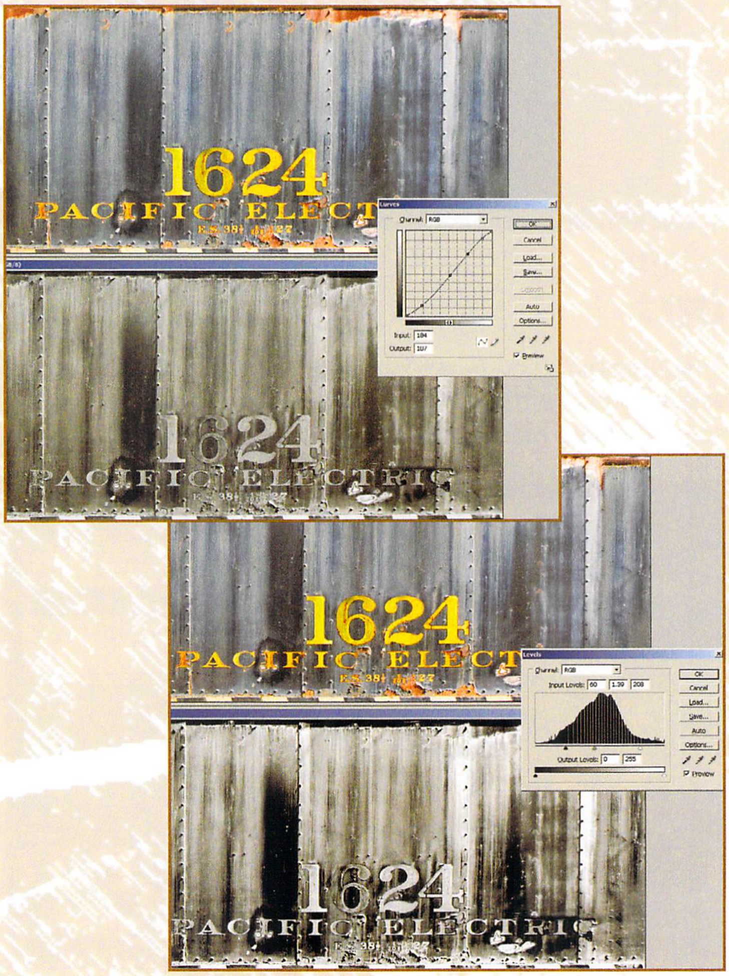
COLOR MODE IS USED TO INTEGRATE THE STRIPES WITH THE BACKGROUND

THE DIFFUSE AND SPECULAR MAPS FOR THE RUST AND MAIN BODY

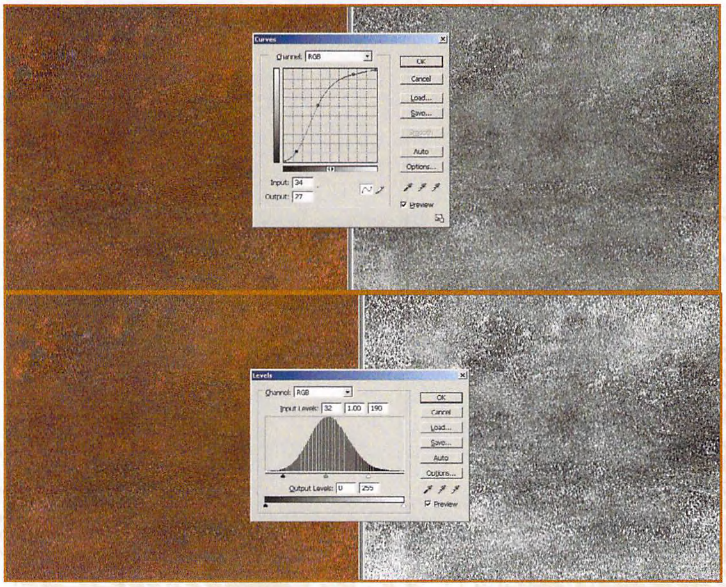
It is always a good idea to work from a B&W image when creating the diffuse and specular maps, since the tonal gray information is what LightWave uses to produce the effects for both.

When working with your diffuse maps, remember that the areas that are closer in black will increase the density of your surface in LightWave. This can give your surface some real character as you decide what areas of your image have depth and what will tonally jump out toward your spectators.

The rules are opposite for the specular map, where the areas that are white will increase specularity and the areas that are black will decrease specularity. My specular maps generally will have more contrast than my diffusion maps. So, often I will develop the specular map from the diffusion. I will also regularly use the Burning and Dodging tool in Photoshop along with the WACOM tablet to locally alter the contrast. Below is an example of the initial start of my contrast control:


1624
PACIFIC ELECTRIC
Curves
Channel: RGB
OK
Cancel
Load...
Save...
Smooth
Auto
Options...
Input: 184
Output: 107
Preview
Levels
Channel: RGB
Input Levels: 60 1.39 208
Output Levels: 0 255
OK
Cancel
Load...
Save...
Auto
Options...
Preview

TRAIN SIDE DIFFUSED MAP (TOP) AND SPECULAR MAP (ABOVE)

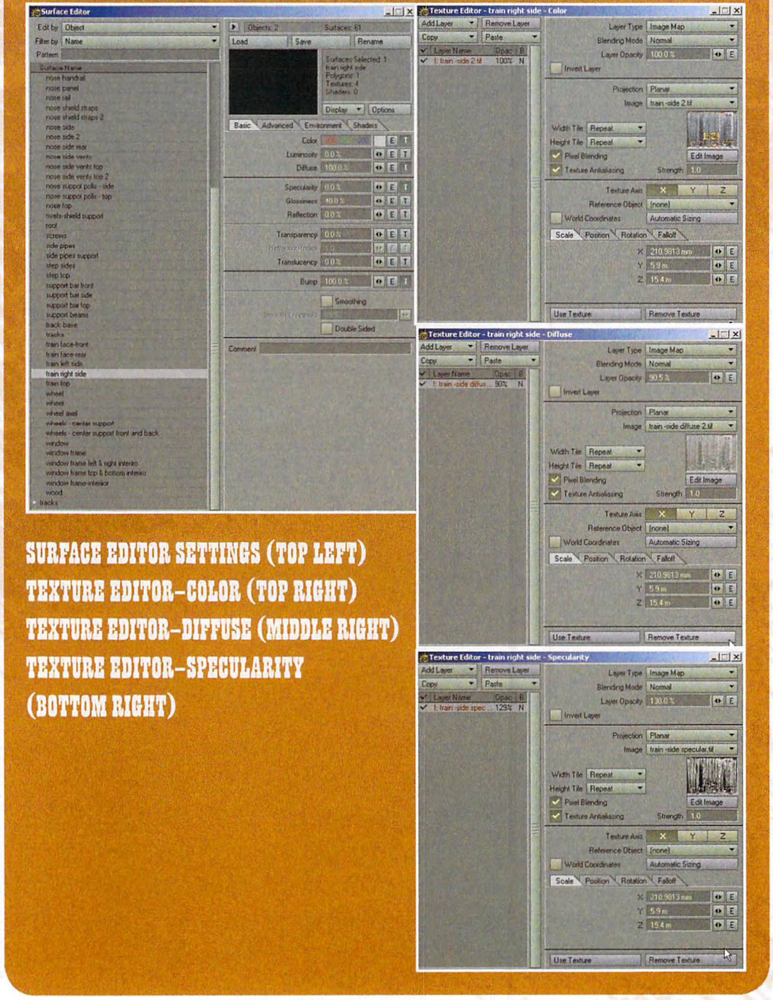

Curves
Channel: RGB
Input: 34
Output: 77
☑ Preview

Levels
Channel: RGB
Input Levels: 32 1.00 190
Output Levels: 0 255
☑ Preview

RUST DIFFUSED MAP (TOP) AND SPECULAR MAP (ABOVE)

LIGHTWAVE SETTINGS FOR MAIN BODY

MAIN TEXTURE


Surface Editor
Edit by: Object
Filter by: Name
Pattern
Objects: 2 Surfaces: 61
Surface Name
nose handrail
nose panel
nose rail
nose shield straps
nose shield straps 2
nose side
nose side 2
nose side rear
nose side vents
nose side vents top
nose side vents top 2
nose suppot polls - side
nose suppot polls - top
nose top
rivets-shield support
roof
screws
side pipes
side pipes support
step sides
step top
support bar front
support bar side
support bar top
support beams
track base
tracks
train face-front
train face-rear
train left side
train right side
train top
wheel
wheel
wheel axel
wheels - center support
wheels - center support front and back
window
window frame
window frame left & right interiro
window frame top & bottom interiro
window frame-interior
wood
tracks

Surfaces Selected: 1
train right side
Polygons: 1
Textures: 4
Shaders: 0

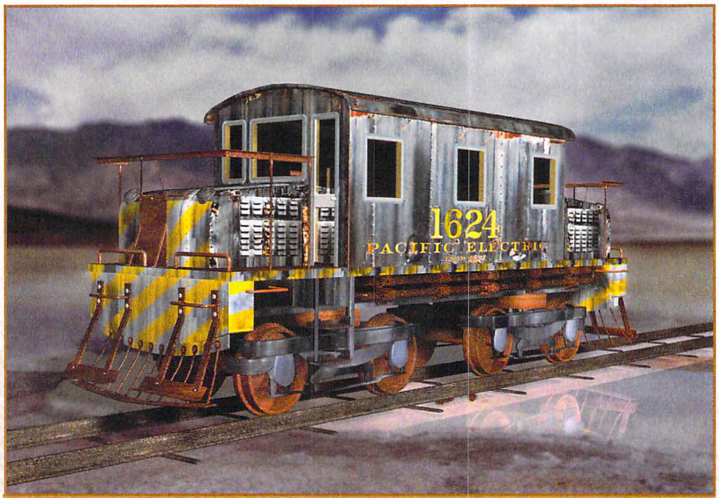
Basic
Color
Luminosity 0.0 %
Diffuse 100.0 %
Specularity 0.0 %
Glossiness 40.0 %
Reflection 0.0 %
Transparency 0.0 %
Translucency 0.0 %
Bump 100.0 %
☐ Smoothing
☐ Double Sided
Comment

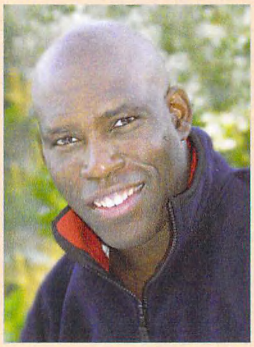
Texture Editor - train right side - Color
Layer Name: I: train -side 2.tif Opac: 100% B: N
Layer Type: Image Map
Blending Mode: Normal
Layer Opacity: 100.0 %
☐ Invert Layer
Projection: Planar
Image: train -side 2.tif
Width Tile: Repeat
Height Tile: Repeat
☑ Pixel Blending
☑ Texture Antialiasing Strength: 1.0
Texture Axis: X
Reference Object: (none)
☐ World Coordinates
Scale
X: 210.9813 mm
Y: 5.9 m
Z: 15.4 m

Texture Editor - train right side - Diffuse
Layer Name: I: train -side diffus... Opac: 90% B: N
Layer Type: Image Map
Blending Mode: Normal
Layer Opacity: 90.5 %
☐ Invert Layer
Projection: Planar
Image: train -side diffuse 2.tif
Width Tile: Repeat
Height Tile: Repeat
☑ Pixel Blending
☑ Texture Antialiasing Strength: 1.0
Texture Axis: X
Reference Object: (none)
☐ World Coordinates
Scale
X: 210.9813 mm
Y: 5.9 m
Z: 15.4 m

Texture Editor - train right side - Specularity
Layer Name: I: train -side spec... Opac: 129% B: N
Layer Type: Image Map
Blending Mode: Normal
Layer Opacity: 130.0 %
☐ Invert Layer
Projection: Planar
Image: train -side specular.tif
Width Tile: Repeat
Height Tile: Repeat
☑ Pixel Blending
☑ Texture Antialiasing Strength: 1.0
Texture Axis: X
Reference Object: (none)
☐ World Coordinates
Scale
X: 210.9813 mm
Y: 5.9 m
Z: 15.4 m

SURFACE EDITOR SETTINGS (TOP LEFT)
TEXTURE EDITOR–COLOR (TOP RIGHT)
TEXTURE EDITOR–DIFFUSE (MIDDLE RIGHT)
TEXTURE EDITOR–SPECULARITY (BOTTOM RIGHT)



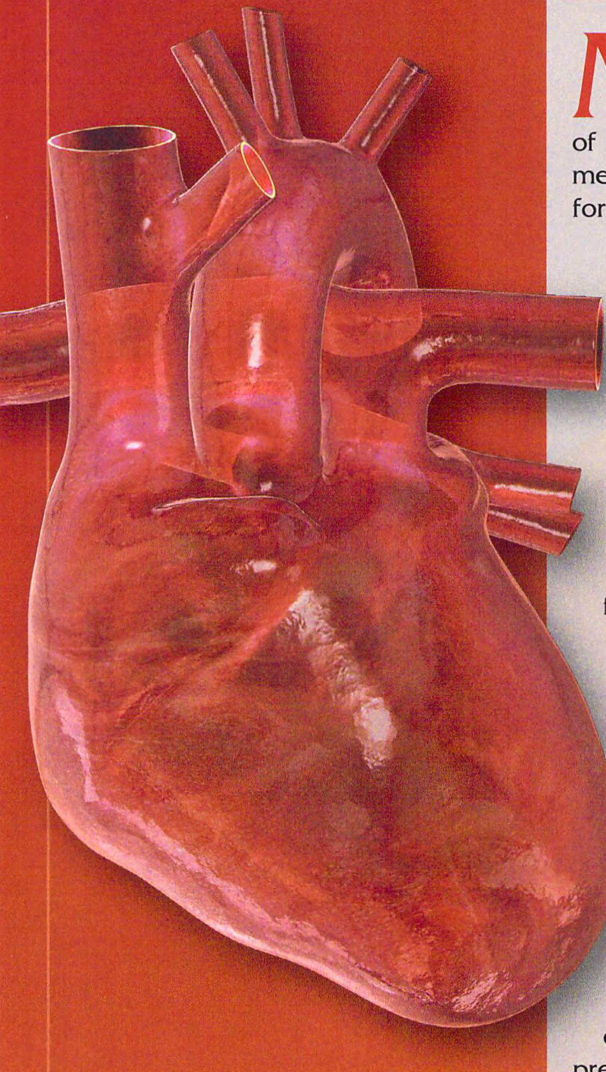


STEPHEN BURNS HAS DISCOVERED THE SAME PASSION FOR THE DIGITAL MEDIUM AS HE HAS FOR PHOTOGRAPHY AS AN ART FORM. HIS BACKGROUND BEGAN AS A PHOTOGRAPHER 22 YEARS AGO AND IN TIME, PROGRESSED TOWARD THE DIGITAL MEDIUM. STEPHEN HAS BEEN A CORPORATE INSTRUCTOR AND LECTURER IN THE APPLICATION OF DIGITAL ART AND DESIGN FOR THE PAST 8 1/2 YEARS. HE HAS BEEN EXHIBITING DIGITAL FINE ART INTERNATIONALLY AT GALLERIES SUCH AS DURBAN ART MUSEUM IN SOUTH AFRICA, CITIZENS GALLERY IN YOKAHAMA, JAPAN, AND CECUT MUSEUM OF MEXICO TO NAME A FEW. PART OF HIS EXHIBITING WON HIM 1ST PLACE IN THE PRESTIGIOUS SEYBOLD INTERNATIONAL DIGITAL ARTS CONTEST. OWNER OF BURNS DESIGN, HE TEACHES DIGITAL MANIPULATION WORKSHOPS IN THE SAN DIEGO AREA AND NATIONWIDE. HIS TEACHING STYLE COMES FROM HIS ABILITY TO SHARE AN UNDERSTANDING OF PHOTOSHOP SO THAT THE STUDENT HAS THE ABILITY TO INTUITIVELY APPLY IT TO HIS/HERS CREATIONS.

Medical Modeling:

USING LIGHTWAVE TO MODEL A HUMAN HEART

BY ROBERT CALANDRIELLO



BECAUSE THE HEART IS SUCH A COMPLEX ORGAN, THE BEST PLACE TO START IS TO FIND A REFERENCE, WHETHER IT BE IMAGES ON THE WEB OR IN MEDICAL BOOKS. I'VE ACTUALLY HAD TO VISIT AN ANATOMY LAB FOR ONE OF MY LAST PROJECTS. (I PARTICULARLY PREFER THE BOOKS TO A CADAVER LYING ON A GURNEY.)

Medical modeling has become big business for big business. I've spent the past seven years of my career working for two mega medical companies, and the demand for high quality, 3D renders for medical devices and body parts has gone up dramatically. This is primarily due to the fact that since software packages like LightWave make the final render so spectacular, it's much more cost effective to model a device rather than hire some high priced photo agency to take a few very expensive images. And in my opinion, LightWave has by far, one of, if not the best, most powerful and affordable rendering engines on the market today!

In this lesson, we'll model a human heart along with some of the arteries and veins that run in and out of this amazing human organ.

Because the heart is such a complex organ, the best place to start is to find a reference, whether it be images on the Web or in medical books. I've actually had to visit an anatomy lab for one of my last projects. (I particularly prefer the books to a cadaver lying on a gurney.) The most detailed and impressive illustrated medical books are those by the late, great Frank H. Netter, M.D. (1906-1991). His work is incredible, and he is often referred to as "Medicine's Michelangelo." I could only imagine what he could have done if the great Doctor had had LightWave!

Once you've found images, scan them in so you can add them to the background as a modeling guide. As you can see (See Figure 1), I've sketched out a front and side view. To add them in Modeler, click the Backdrop Tab in your Display Options. I prefer working in the Quad Layout, and have added the "Anterior.jpg" file to the bottom left (BL) quad, and the "Side.jpg" file to the bottom right (BR) quad. You can size these images and set image resolution while in the backdrop tab. I set the BL size to 12m, the BR size to 11M, and the resolution to 512 for better clarity. I've also checked the invert box, making viewing easier while modeling (See Figure 2).

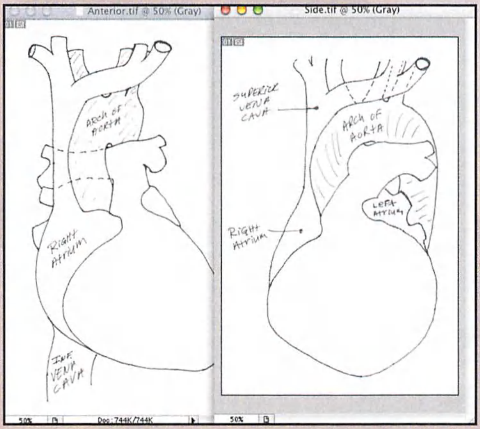
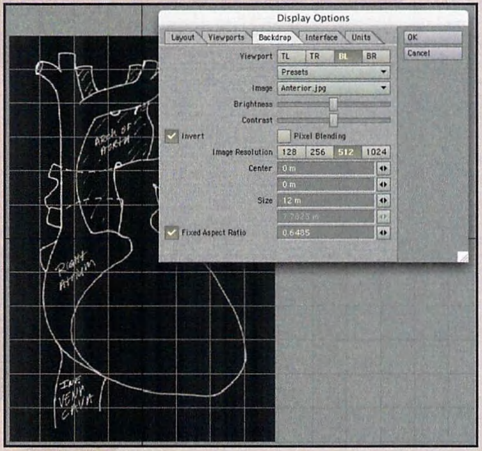


FIGURE 1



Viewport: BL
Image: Anterior.jpg
☑ Invert
☐ Pixel Blending
Image Resolution: 512
Center: 0 m
0 m
Size: 12 m
7.7825 m
☑ Fixed Aspect Ratio: 0.6485

FIGURE 2

Now that the background images are loaded, draw a circle with 24 sides, 12 segments and rotate it (See Figure 3). You now have your basic shape; from here, simply start dragging the polygons using the Magnet tool until you have the basic shape of the heart. Select the bottom polygons and delete them (See Figure 4), as they will not sub-divide smoothly, and add 11 points

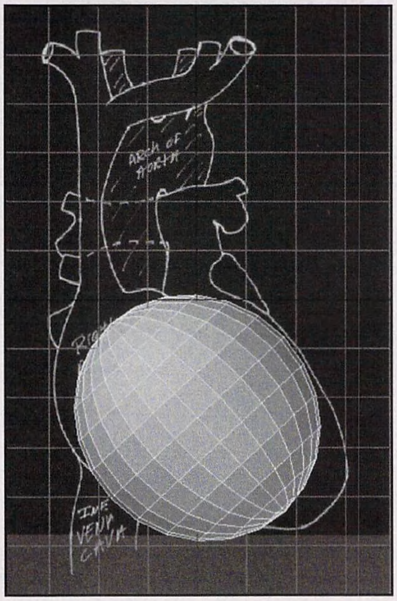


FIGURE 3

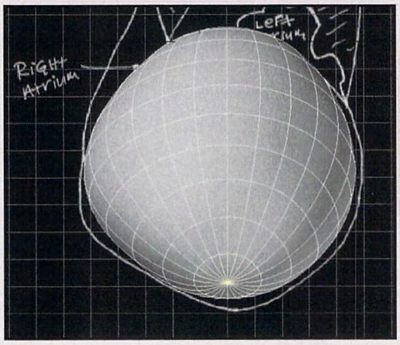


FIGURE 4

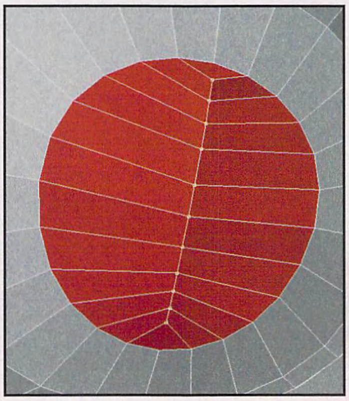


FIGURE 5

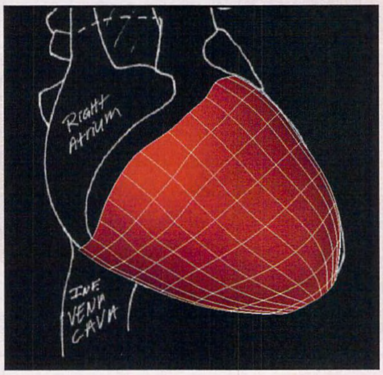


FIGURE 6

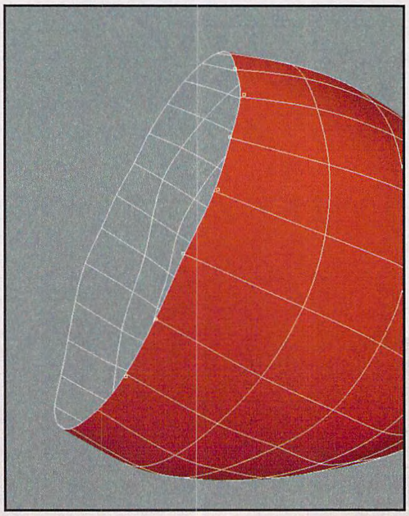


FIGURE 7

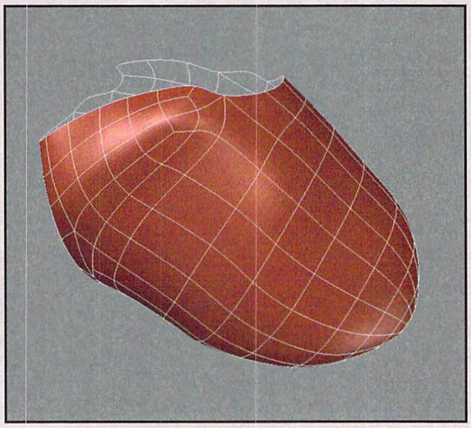


FIGURE 8

and create new polygons (See Figure 5). I've only colored the polygons red so you can see how the polygons should be joined. After creating the bottom polygons, surface all the polygons red so you can better see the shape against the background image.

Let's delete the polygons as seen in Figure 6, so we can shape new polygons around the right atrium. We could have just started pulling polygons again with the Magnet tool, but this will be a good exercise to get familiar with the Extender tool. It may be more work, but once we start adding the main pipes to and from the heart, this will be more accurate.

In the Perspective view, select a few points as shown in Figure 7, click Extender, and drag the new points into new positions. Continue using the Extender tool to form the Right Atrium area, and as you can see in Figure 8, we're starting to get a recognizable shape. Next, we'll model the area for three big pipes of the heart: the Superior Vena Cava, which brings de-oxygenated blood from the upper regions of the body, the Aorta, which distributes blood to all the arteries of the body except the pulmonary artery, and the Pulmonary Trunk, which will branch into the left and right Pulmonary arteries, which carry de-oxygenated blood to the lungs (See Figure 9).

For the next step, we'll create the Arch of the Aorta. There are a few different ways to create the arch, and this is one of them. Draw a disc with the same amount of sides directly over the Aorta hole on the heart you've created, with 12 segments, and bend it towards the back of the heart. Join the Aorta to the arch by selecting four points, and click "p" to create a polygon (See Figure 10). While we're up on the arch, we'll need to create three major pipes that branch off: the Brachiocephalic trunk, the Left Common Carotid Artery,

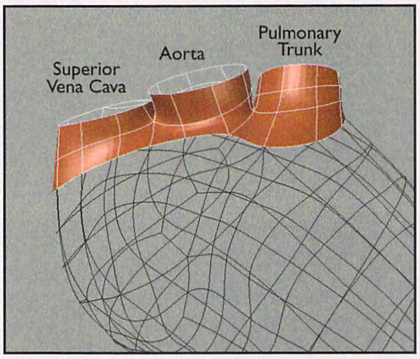


FIGURE 9

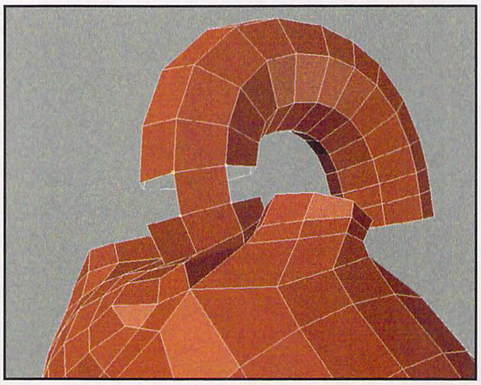


FIGURE 10

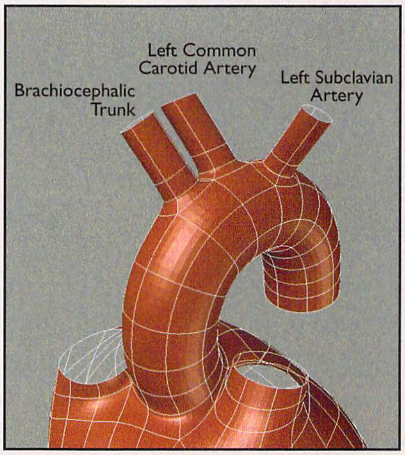
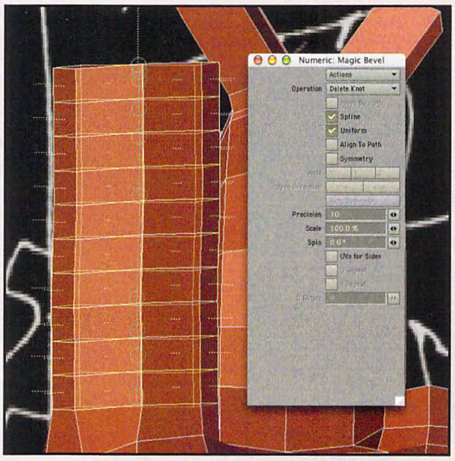


FIGURE 11



Operation: Delete Knot

☐ Move By Path

☑ Spline

☑ Uniform

☐ Align To Path

☐ Symmetry

Precision: 10

Scale: 100.0 %

Spin: 0.0°

☐ UVs for Sides

FIGURE 12

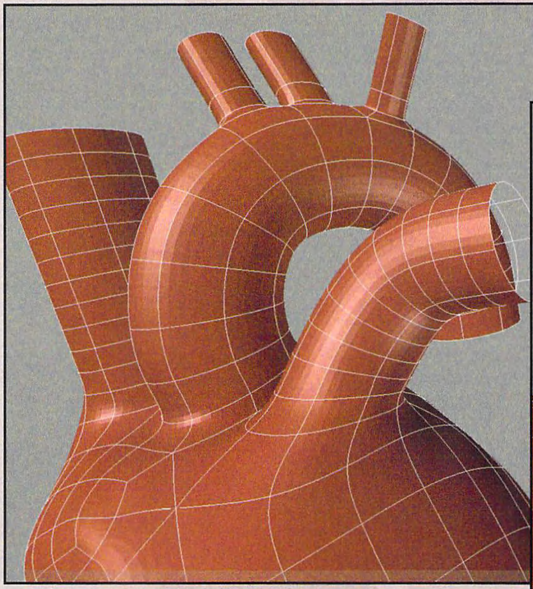


FIGURE 13

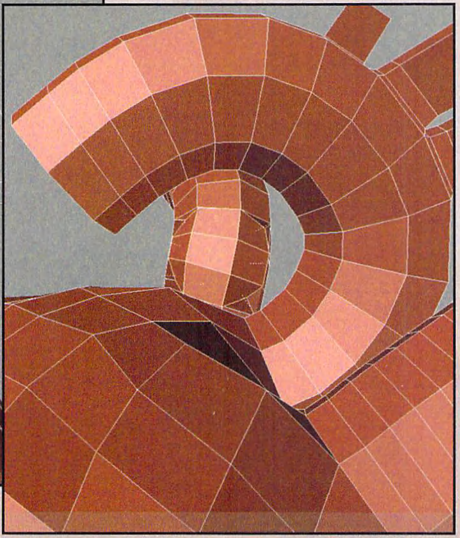


FIGURE 14

and the Left Subclavian Artery (See Figure 11). You can create these by selecting a polygon on the Aorta and making a few "Smooth Shift" moves. Create all three in Figure 11 with the Smooth Shift tool.

To extend the Superior Vena Cava, select the points of the Vena Cava hole and click "p" to create a polygon. We'll use the Magic Bevel tool, which by default resides under the Construct > Additional tabs. Select the Magic Bevel tool, and bring up the Magic Bevel Numeric Box, Activate it, and change the scale to 100%. Check OFF the Align to Path box, and click ON the Spline and Uniform boxes (See Figure 12). This will space out the new segments you'll create evenly. You'll see small circles appear on all the polygons. In the bottom left quad, which is my Back view, drag straight up; you'll see polygons being created as you drag. In the Magic Bevel Numeric Box, next to Operation, click on the dropdown menu and select "Delete Knot." Start deleting some of the segments you've made by clicking on the blue circles. The Magic Bevel tool is excellent for creating arteries and veins.

Use the same Magic Bevel Technique for creating the Left Pulmonary Artery from the Pulmonary Trunk. After you're finished dragging the segments, rotate them to the right (Figure 13). To create the Right Pulmonary Artery, this time we are going to use the "Smooth Shift" tool. Select some of the polygons you've just created in the Left Pulmonary Artery and start Smooth Shifting them through the bottom of the Arch of the Aorta. It's also a good idea to bring the four corner points in a bit, so when you sub-divide the model, the artery you're creating with Smooth Shift will look round and not square (Figure 14).

We're going to create the Left and Right Pulmonary veins, which are located on the backside of the heart, so if you'd like, delete three segments at the end of the Aorta so you can have more room to work. Select the polygons as shown in Figure 15 and stretch them out a bit. This is the beginning of the Left Atrium. At this stage, I'd like to Freeze this so we can have a few more polygons, but not too many. So let's set our Patch Divisions to "2" in General Options, then Sub-Divide (if not Sub-Divided) and Freeze. Ahhh...Smoother, and not too heavy on the polygons. Then delete the polygons and start to shape the pulmonary veins so they can come straight out of the left atrium (See Figure 16). Once you are satisfied with the shape you've created for the Pulmonary veins, it's back to "Smooth Shift" to create the four veins. After they're created, delete some polygons to make the opening for the Inferior Vena Cava. This is the vein that brings de-oxygenated blood back to the heart from the lower part of the body (See Figure 17).

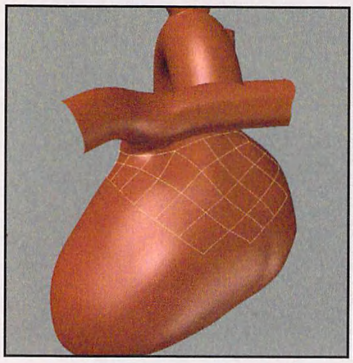


FIGURE 15

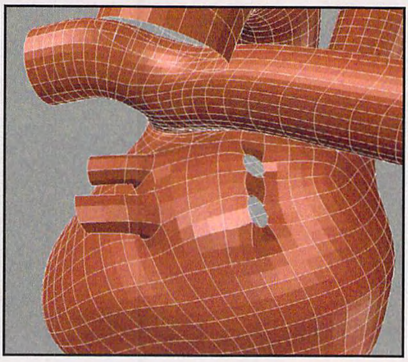


FIGURE 16

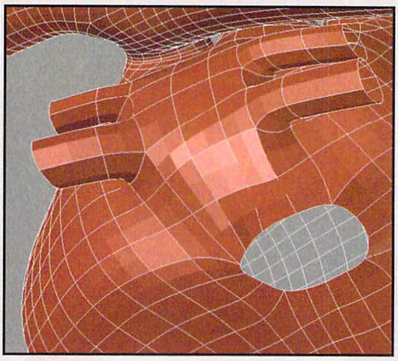


FIGURE 17

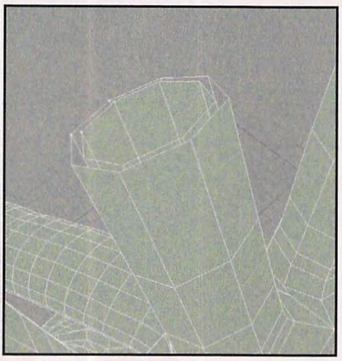
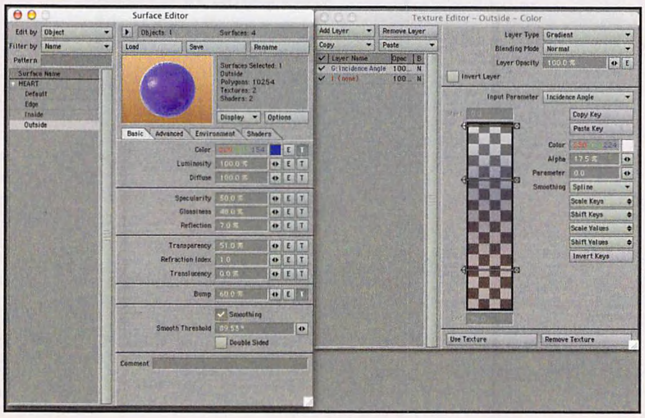


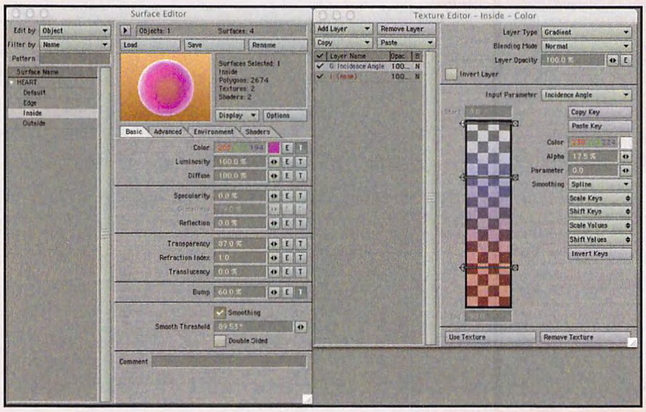
FIGURE 18



Surface Editor
Edit by: Object
Filter by: Name
Surface Name: HEART — Default, Edge, Inside, Outside
Objects: 1 Surfaces: 4
Surfaces Selected: 1
Outside
Polygons: 10254
Textures: 2
Shaders: 2
Color [illegible] 154
Luminosity 100.0 %
Diffuse 100.0 %
Specularity 50.0 %
Glossiness 40.0 %
Reflection 7.0 %
Transparency 51.0 %
Refraction Index 1.0
Translucency 0.0 %
Bump 60.0 %
☑ Smoothing
Smooth Threshold 89.53°
☐ Double Sided

Texture Editor – Outside – Color
Layer Name: G: Incidence Angle 100... N; 1: (none) 100... N
Layer Type: Gradient
Blending Mode: Normal
Layer Opacity: 100.0 %
☐ Invert Layer
Input Parameter: Incidence Angle
Color 230 [illegible] 224
Alpha 17.5 %
Parameter 0.0
Smoothing: Spline

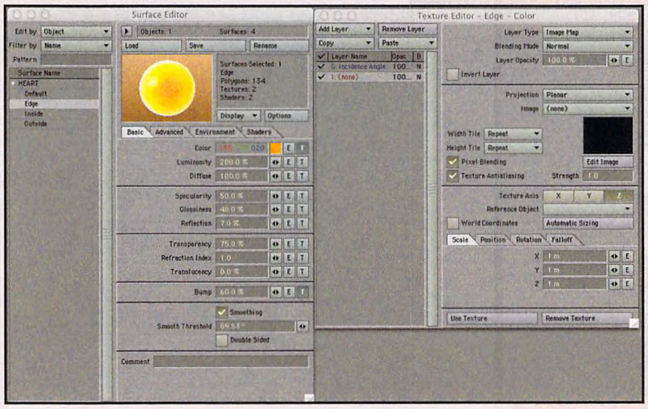
FIGURE 19



Surface Editor
Edit by: Object
Filter by: Name
Surface Name: HEART — Default, Edge, Inside, Outside
Objects: 1 Surfaces: 4
Surfaces Selected: 1
Inside
Polygons: 2674
Textures: 2
Shaders: 2
Color [illegible] 194
Luminosity 100.0 %
Diffuse 100.0 %
Specularity 0.0 %
Reflection 0.0 %
Transparency 87.0 %
Refraction Index 1.0
Translucency 0.0 %
Bump 60.0 %
☑ Smoothing
Smooth Threshold 89.53°
☐ Double Sided

Texture Editor – Inside – Color
Layer Name: G: Incidence Angle 100... N; 1: (none) 100... N
Layer Type: Gradient
Blending Mode: Normal
Layer Opacity: 100.0 %
☐ Invert Layer
Input Parameter: Incidence Angle
Color 230 [illegible] 224
Alpha 17.5 %
Parameter 0.0
Smoothing: Spline

FIGURE 20



Surface Editor
Edit by: Object
Filter by: Name
Surface Name: HEART — Default, Edge, Inside, Outside
Objects: 1 Surfaces: 4
Surfaces Selected: 1
Edge
Polygons: 134
Textures: 2
Shaders: 2
Color [illegible] 020
Luminosity 200.0 %
Diffuse 100.0 %
Specularity 50.0 %
Glossiness 40.0 %
Reflection 7.0 %
Transparency 75.0 %
Refraction Index 1.0
Translucency 0.0 %
Bump 60.0 %
☑ Smoothing
Smooth Threshold 89.53°
☐ Double Sided

Texture Editor – Edge – Color
Layer Name: G: Incidence Angle 100... N; 1: (none) 100... N
Layer Type: Image Map
Blending Mode: Normal
Layer Opacity: 100.0 %
☐ Invert Layer
Projection: Planar
Image: (none)
Width Tile: Repeat
Height Tile: Repeat
☑ Pixel Blending
☑ Texture Antialiasing
Strength 1.0
Texture Axis: Z
☐ World Coordinates
Scale X 1 m
Y 1 m
Z 1 m

FIGURE 21

FOLLOW THESE NEXT STEPS:

1. Name the entire shape we've just created "Outside."
2. Copy and paste on a background layer and name the surface "Inside."
3. Smooth Scale the "Inside" layer (-40mm) and flip the polygons.
4. Copy the "Inside" layer and paste onto the "Outside" layer.
5. Select 4 points (2 from the outside layer, and 2 from the inside layer) and create a polygon. You must do this with ALL the openings of the pipes. You can name these surfaces "Edge." To create a nice smooth flat edge when sub-divided, Smooth Shift the "Edge" polygons, and you may have name some of the "Outside" polygons (See Figure 19).

These next surfacing techniques I learned from Dan Ablan. If it's in your budget, purchase his courseware, it will be the best cash you spend learning the techniques from the master himself. Well worth the money — he gives you 24 CD's! I still haven't finished watching all of them. They're AWESOME!

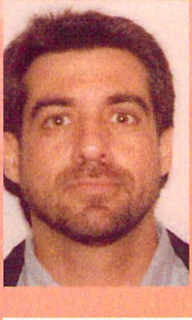
To Surface the Outside Surface, see Figure 19.

To Surface Inside Surface, see Figure 20.

To Surface Edge Surface, see Figure 21.

I also added some crumple and fBmNoise bump to all the surfaces.

I find modeling medical items intrigues me the most. Since working for a living is a necessity for most of us on this planet, if you enjoy going to work and doing what you love, well, you've won half the battle. ■



BOB CALANDRIELLO HAS SPENT THE LAST SEVERAL YEARS WORKING IN THE MEDICAL DEVICE INDUSTRY. AS GRAPHICS COMMUNICATIONS MANAGER AT CORDIS ENDOVASCULAR, A JOHNSON & JOHNSON COMPANY, HE WORKS CLOSELY WITH SALES AND MARKETING, ALONG WITH R&D, CREATING PHOTO-REALISTIC RENDERS AND ANIMATIONS FOR NEWLY CREATED MEDICAL DEVICES. YOU CAN SEE THE FINE MODELING AND TEXTURE DETAIL IN THE STENTS WHICH BOB CREATED WITH LIGHTWAVE (FIGURES A, B). STENTS ARE USED TO OPEN CLOGGED ARTERIES AND RESTORE BLOOD FLOW. VIEW MORE OF HIS WORK AT WWW.ROBERTCAL.COM.

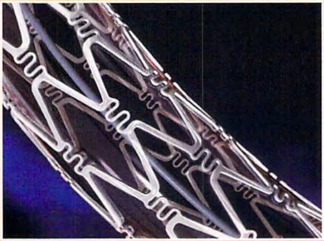


FIG A

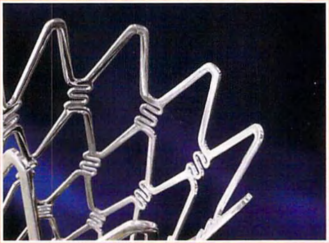


FIG B

FAST, FAKE FILM FILTER USING THE VT[3]

BY TIMOTHY ALBEE

WITH ALL THESE REAL-TIME TOOLS, THERE SHOULD BE A WAY TO REPLICATE THIS FANTASTIC FILM-LOOK FILTER, AND DO IT WITHOUT THE NEED TO PRE-RENDER!

The other day I was thumbing through one of those "gee, I wish I could afford that" catalogues of film and video hardware and software. I came across a full-page advert for something that promised transformation of your shot-on-video footage into something that looked like it was shot on film.

Sure, the "after" examples in the advertisement looked pretty silky, but the price tag attached to the software was enough to make my debit card run screaming for the hills.

I got to thinking: the VT[3] system comes complete with a whole slew of powerful, real-time, post-processing tools, of which, most videographers barely scratch the surface. Color correction, blurs, overlays, keying ... with all these real-time tools, there should be a way to replicate this fantastic Film-look filter, and do it without the need to pre-render!

A piping-hot cup of tea and half an hour later, I'd figured out how to exactly replicate the film-look shown in the advertisement I'd seen. Here's how:

FAST, FAKE FILM FILTER... FREE! (ON THE VT[3])

1 – SOFTEN THE SHARP "DELTA."

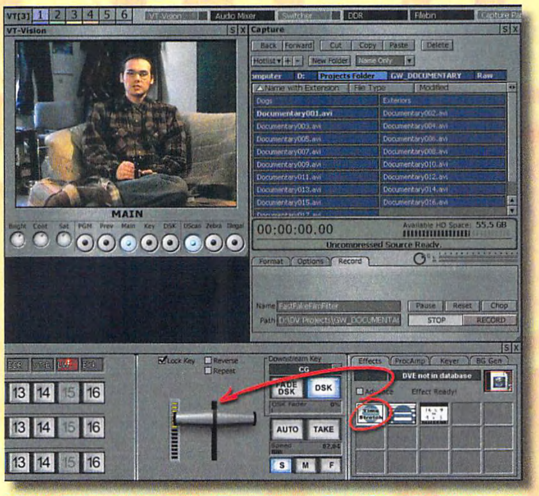
"Delta" refers to the change within an element as measured over a specified unit (in our case, over Time: Delta-T).

NTSC's sixty-fields-per-second records life with unrelenting clarity. This is why, when you compare 24 fps Film to interlaced, 29.97 fps NTSC Video, even a layperson can instantly tell the difference between the two. NTSC records the visual changes over time much more sharply than film.

So, the first thing we've got to do is to "soften" the Delta-T of NTSC.

The DV/Fire-Wire input gives us the video exactly as the camera shot it, with all its super-crispness. For this Film-look, we don't want that.

We want to record our footage using the VT[3]'s Time-Stretch effect, which, over time, will smoothly layer new fields onto old. (How much effect there is depends upon how far the "T-Bar" is activated.)



RECREATE THE FEEL OF A FILM CAMERA'S SHUTTER ANGLE WITH A LITTLE PULL OF THE T-BAR

With "DVE Folder/5000_Olays/5100_CrmaFX/5114_TimeStretch.dve" loaded and active in the Switcher, a little "pull" of the "T-Bar" will give you a subtle motion-blur that re-creates the feel of a film camera's default Shutter Angle.

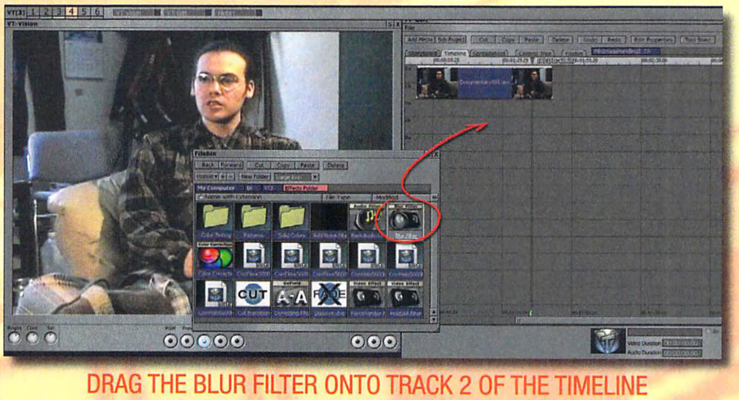
NOTE: VT[3]'s Time-Stretcher used in this manner will also alleviate much of the video-noise associated with mid and low-end cameras.

2 – "SOFT SHARPNESS"

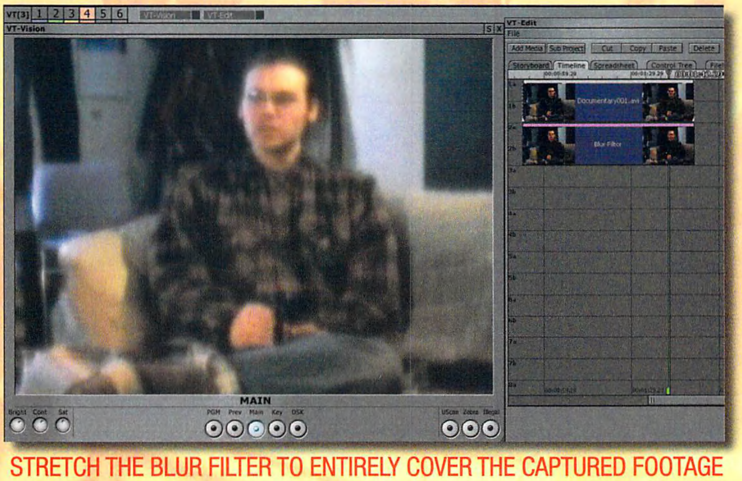
The expensive lens-filter sets you can get for Practical cameras help to boost production value. I'm a big fan of the filters that give a rich softness to shadows and highlights, but still retain a crispness of detail.

Here's how we can recreate that look with the real-time effects available in the VT[3]'s VT-Edit suite.

Putting our captured footage on Track 1 of our Timeline, we drag the Blur Filter from "Effects Folder/Blur.filter" onto Track 2 of the Timeline.

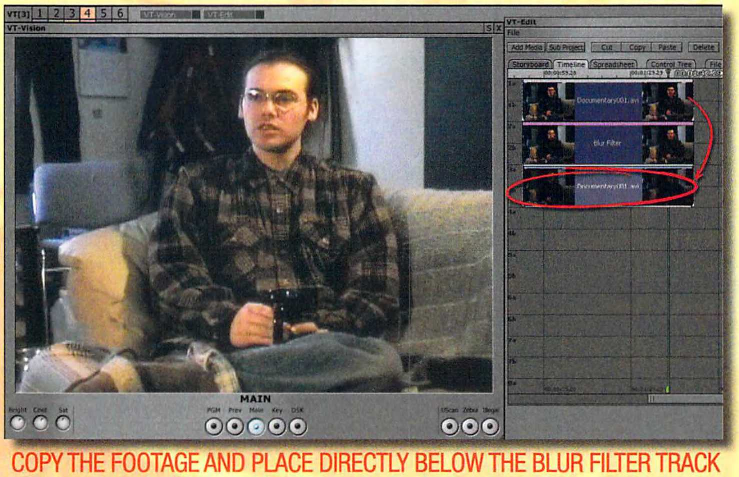


DRAG THE BLUR FILTER ONTO TRACK 2 OF THE TIMELINE


VT-Vision
VT-Edit
Documentary001.avi
Blur Filter
MAIN

STRETCH THE BLUR FILTER TO ENTIRELY COVER THE CAPTURED FOOTAGE

Once inserted in the Timeline, the Blur Filter should be stretched so that it "covers" our captured footage entirely, making the whole clip affected by the Blur Filter. (The default settings of "5" for all Blur values is fine.)


VT-Vision
VT-Edit
Documentary001.avi
Blur Filter
Documentary001.avi
MAIN

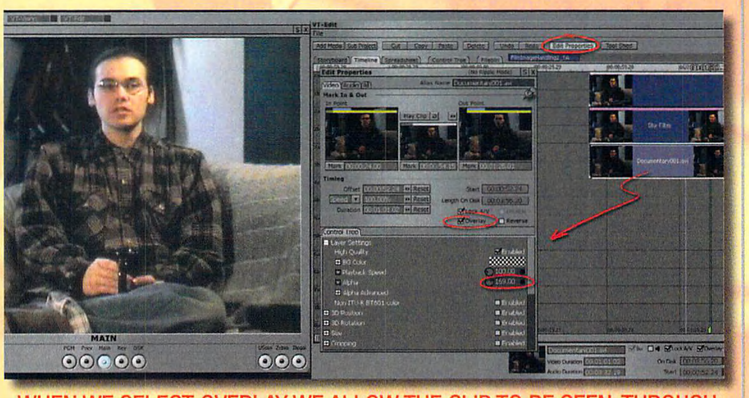
COPY THE FOOTAGE AND PLACE DIRECTLY BELOW THE BLUR FILTER TRACK

Next, we make a copy of our captured footage, putting it on the track directly below the Blur Filter, so that it will not be affected by the Blur Filter, and covers the exact same time range as our first instance of the footage.

NOTE: Holding the "Ctrl" key before click-dragging on a clip will automatically create a copy of the clip as you drag. Once you are dragging the copy (without releasing the mouse-button), you can let go of the "Ctrl" key, switching to pressing the "v" key instead, which will then constrain the movement of the clip to the Vertical axis, keeping the clip's exact place in Time.

This new instance of our footage supersedes the blurred version because it on a lower Track on the Timeline.

When we open up the Edit Properties window, and select Overlay, we enable the clip to be "seen-through" when we reduce its Alpha to 169.


VT-Edit
Edit Properties
Blur Filter
Documentary001.avi
Overlay
MAIN

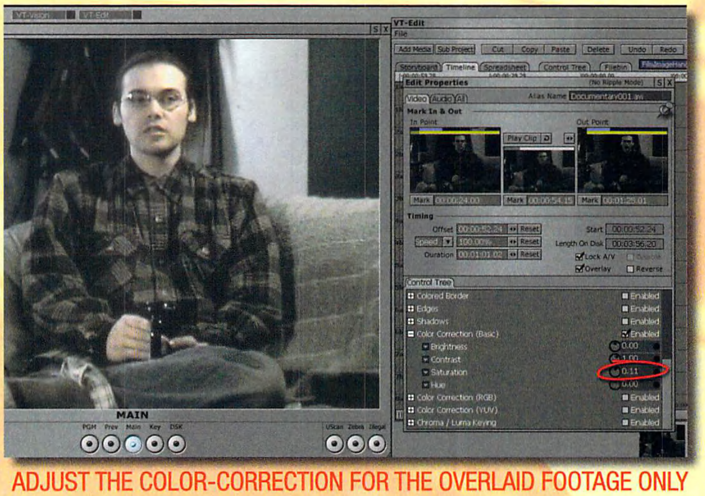
WHEN WE SELECT OVERLAY WE ALLOW THE CLIP TO BE SEEN-THROUGH

You don't need much "see-through" to soften the shadows and highlights of your video footage, and to reduce any remaining video-noise to something that easily passes for film grain. Also, because our original footage is Overlaid onto the blurred version, we still retain sharpness in detail areas!

NOTE: The more you reduce the Alpha of the Overlaid clip, the more of the blurred version will show through. An Alpha value of 100 for the Overlaid clip will make your footage look like it was shot through a soft filter (or a nylon stocking -- an old cinematographer's trick).

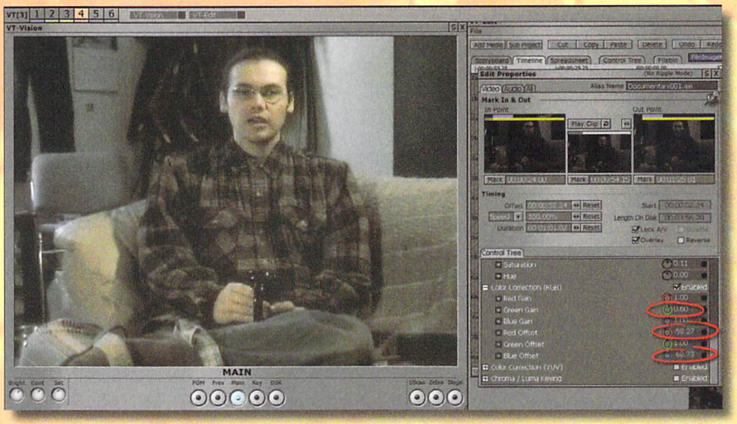
3 – COLOR TIMING

The sky's the limit with playing with colors to evoke palettes of feelings. With a few quick twists of VT-Edit's Color Correction tools, you can affect anything from the desaturated cool tones of "The Matrix" to the Bleach-Bypass look of "Minority Report."


VT-Edit
Edit Properties
Control Tree
Colored Border
Edges
Shadows
Color Correction (Basic)
Brightness
Contrast
Saturation
Hue
Color Correction (RGB)
Color Correction (YUV)
Chroma / Luma Keying
0.11
MAIN

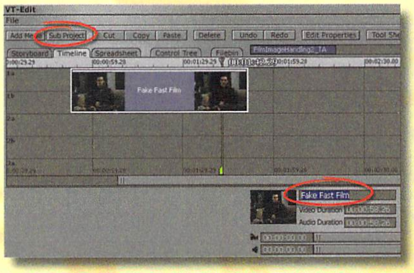
ADJUST THE COLOR-CORRECTION FOR THE OVERLAID FOOTAGE ONLY

I find that whatever look I'm going for, the best place to start is in reducing the Saturation of the colors. Here, working with the color-correction tools for the Overlaid footage only, I've set the value for Color Correction (Basic) | Saturation to .11.


VT-Vision
MAIN
Edit Properties
Mark In & Out
Timing
Control Tree
Saturation
Hue
Color Correction (RGB)
Red Gain
Green Gain
Blue Gain
Red Offset
Green Offset
Blue Offset
Color Correction (YUV)
Chroma / Luma Keying

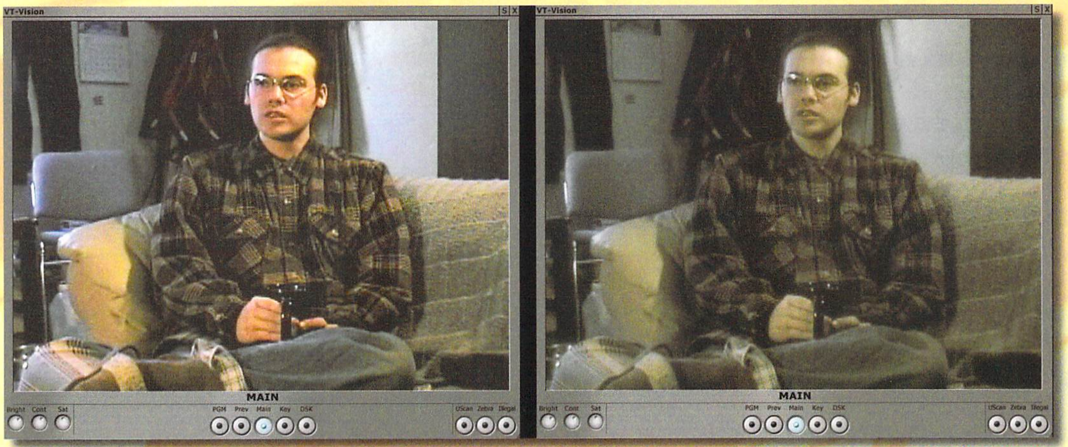
EXPERIMENT WITH THE COLOR SETTINGS TO ACHIEVE THE DESIRED LOOK

Next, with nothing more scientific than just "playing around," I tweak the Color Correction (RGB) settings of the Overlaid footage until I get the palette I'm looking for. (The values I've used here are: Green Gain: .6, Red Offset: -58.27, Blue Offset: -68.73.)


VT-Edit
File
Sub Project
Cut
Copy
Paste
Delete
Undo
Redo
Edit Properties
Storyboard
Timeline
Spreadsheet
Control Tree
Fake Fast Film
Video Duration
Audio Duration

COLLAPSE THE FILE INTO ONE EDITABLE TRACK

Lastly, so I can edit with this post-effected footage as if it were a single clip, I select both clips and the Blur Filter, and click the Sub Project button to "collapse" my work, naming the Sub Project something that will make sense when I come across it later.


VT-Vision
MAIN
VT-Vision
MAIN

THE FINAL IMAGE WITH THE ORIGINAL FOOTAGE ON THE LEFT AND THE FILTERED FOOTAGE ON THE RIGHT

On the left, the saturated colors and super-sharpness of our original footage look amateurish when directly comparing it to the satiny polish and selective palette of our Fake Film Filtered Footage on the right!

The best thing about the VT[3] system is that every aspect of this simple-but-powerful effect is playable in real-time!

You can tweak and noodle to your heart's content, and with the press of the spacebar, you can instantly see your adjustments applied to your moving footage!

The everything-is-real-time aspect of the VT[3] is beyond value when subtle adjustments mean the difference between "looking okay" and winning awards for your movie, documentary or commercial!

Have fun!

TIMOTHY ALBEE IS A WRITER, DIRECTOR, PRODUCER, ANIMATOR AND AUTHOR, LIVING AND WORKING FROM FAIRBANKS, ALASKA. A FOURTEEN-YEAR VETERAN OF THE ENTERTAINMENT INDUSTRY, HIS CREDITS INCLUDE WALT DISNEY FEATURE ANIMATION, BROADCAST TELEVISION, SYNDICATED TELEVISION, COMMERCIALS AND VIDEO GAMES. HIS MOST RECENT PROJECTS ARE THE AWARD-WINNING CG FILM "KAZE, GHOST WARRIOR," AND THE BOOK "CGI FILMMAKING," WHICH DETAILS EVERY STEP OF THE PRODUCTION METHODS THAT MADE "KAZE, GHOST WARRIOR"'S BUDGET OF $5K LOOK LIKE $50M.

"READ, LEARN DO! IT'S HOW DREAMS COME TRUE!"
HTTP://WWW.KAZEGHOSTWARRIOR.COM

IBM INTELLISTATION T221 FLAT PANEL MONITOR

THE HIGH END VISUALIZATION TOOL FOR PROS

BY AKIKO ASHLEY

IBM's T221 is the ultimate in flat panel displays for Computer Graphic Pros who appreciate working with their 3D models in fine detail. There have been many flat panels on the market, and many Graphics Pros have yet to buy many of them due to the lack of resolution, color issues and quality issues. IBM IntelliStation T221 is one of the top-of-the line solutions with a lot of features that are worth the price of the product. If you are using an NVIDIA Quadro FX 3000 card with an IntelliStation dual processor AMD Opteron machine, you have the power solution for those high-end jobs in visual effects, animation, CAD, engineering, medical and more. How many times did you have a model that you thought was in perfect condition and ready to go, but once you rendered it, there was a lot of detail missing, so you had to go back and fix it? You weren't getting what you saw on the monitor. Time is money for Pros who have tough deadlines and clients who need it yesterday.

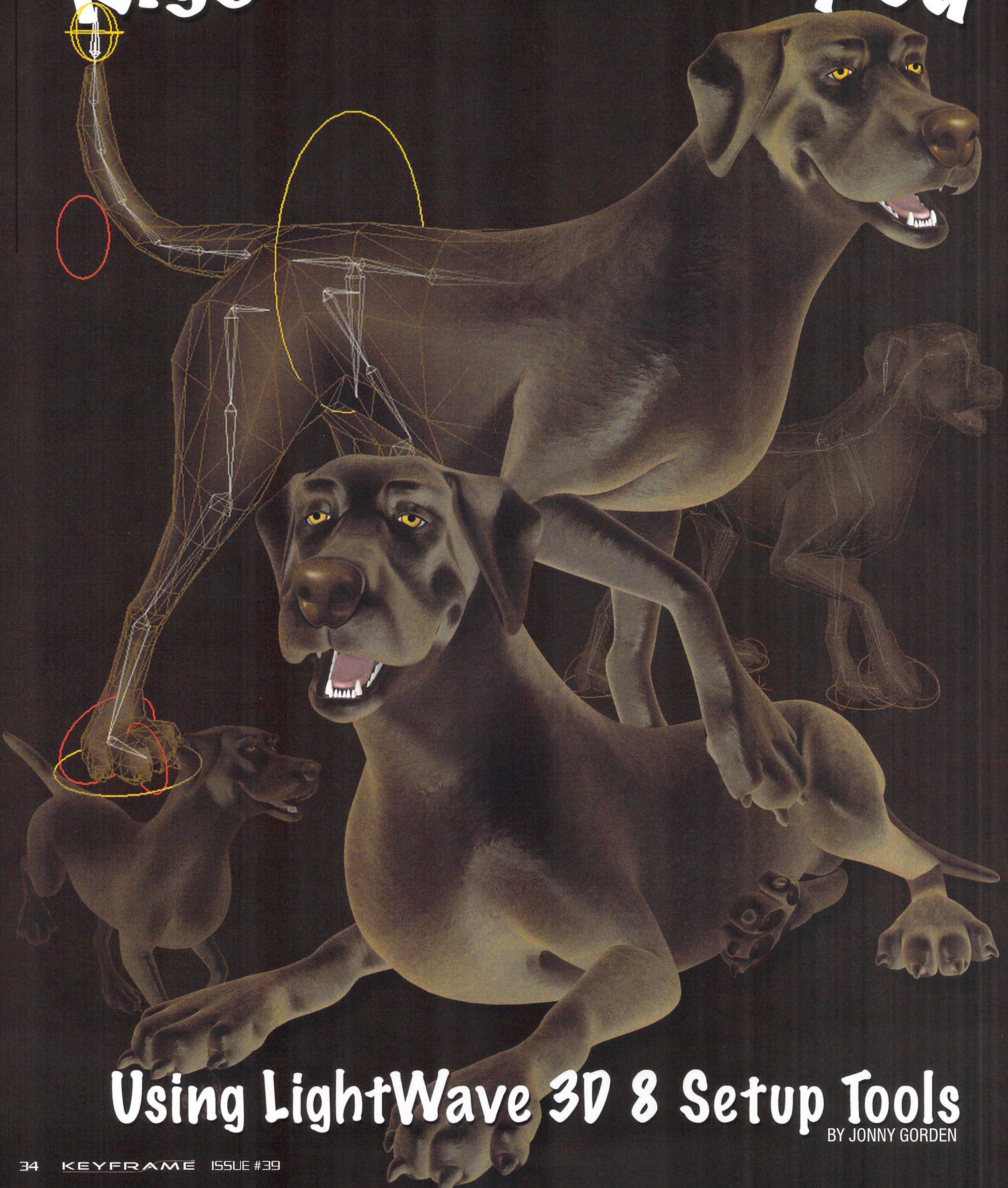
Key Features:

- Advanced Design. Space saving design just 7.7 inches deep.
- Ergonomically pleasing.
- Convenient Front Panel Controls.
- On Screen Display.
- Tilt Stand.
- Flexible connections, multi-head cable supplied with USB connector for firmware upgrades.
- 9.2 million pixels at 204 pixels per inch.
- Cinematic 16:10 aspect ratio.
- 3840 x 2400 Maximum addressability.
- 400:1 high contrast image with 170 degree viewing.
- 24-bit color support, Firmware programmable for color matching systems
- 48Hz screen update rate.
- Display modes: QUXGA-W, UXGA, SXGA, XGA, SVGA, VGA.
- TFT LCD Technology with polarizing non-glare coating.
- High resolution Scalable Desktop (HRSD) technology enables magnified GUI features, even at the highest resolution for compatible OPEN GL applications.
- Supports NVIDIA Quadro 4 980 XGL, Quadro FX 1000, 1100, 2000, 3000.
- Compatible leading operating systems include Windows XP and 2000. Mac OS X and Linux.

The monitor has a 16:10 aspect ratio that reduces the need for panning, zooming, and scrolling, saving your wrist a lot of work. The models used in this test had 480,000 polygons and moved effortlessly with the NVIDIA Quadro FX 3000 card. I was able to run Modeler and LightWave simultaneously without taking up much real estate on the screen. In Maya and Softimage, the additional space gives you the ability to work with much more complex scenes. It's great opening several applications without having to toggle windows. If you write your own Shaders for the NVIDIA Quadro cards, you are going to love this monitor. The textures can be seen in full detail, capturing the nuances that make it lifelike. The images are photorealistic and look better then a lot of photo printers. Walking it through all the animation programs was fun. You get better previews, so you can set your timing without losing a step in final renders. You can move through a scene without any issues. It was amazing how easy it was to work with particles and effects on this screen, especially with packages that offer real time feedback. Doing Fire and Water Effects were a breeze using the NVIDIA Quadro FX 3000 card. It really does make a difference to be able to see what you are doing with such precision. The only downside is that it will need an interface much faster then the current DVI to improve the refresh rate at the full resolution capabilities of this display. The price is a bit heavy, but when you are working on professional projects, with decent budgets, this is a tool that can make your job much easier and save you money down the line. It is a great investment that will give any studio, company or individual more then a slight edge over their competitor. The IBM IntelliStation T221 Flat Panel is about $8399.00. This is a bargain for High End Pros for the quality it delivers.

For more information about the T221 Flat Panel, please go to www.IBM.com

Rigging a Quadruped

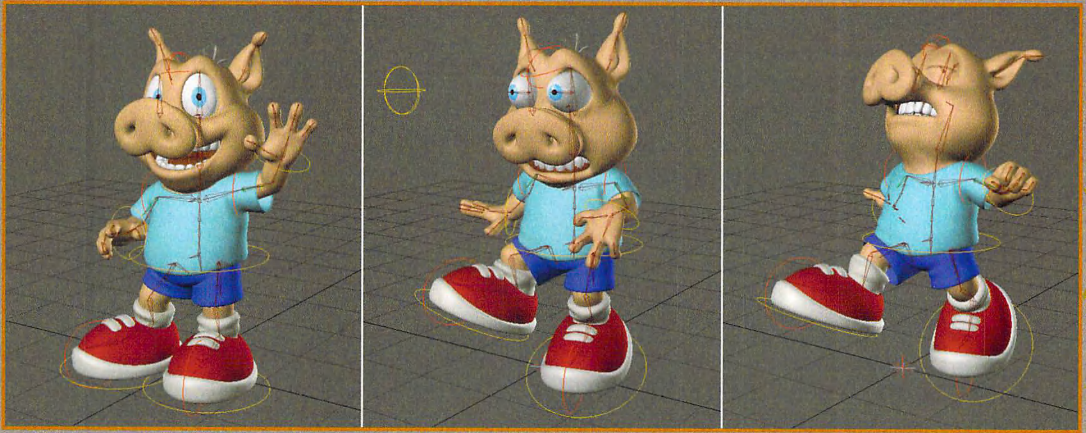


Using LightWave 3D 8 Setup Tools

BY JONNY GORDEN

When skelegons were introduced in LightWave 3D 6, they opened up a range of possibilities for rigging that weren't available before, back when bones only existed in Layout.

Now LightWave 3D 8 has included many of the benefits of skelegons in its Setup tools, making creating and editing bones in Layout much easier. I have spent a lot of time with these new tools while writing my ***LightWave 3D 8 Cartoon Character Creation*** books, so I can tell you with confidence that they significantly reduce the time it takes to rig characters.



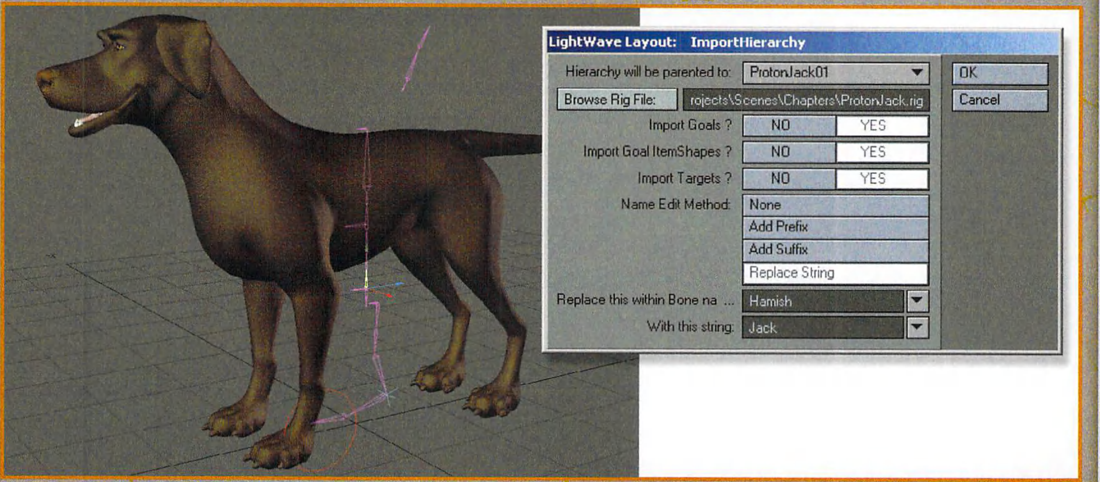
THE RIG FILE FOR HAMISH WAS USED TO RIG THE QUADRUPED

RIG FORMAT

The new RIG files make it easy to apply and adjust a rig for different characters. You can save an entire rig, or individual hierarchies in the RIG format, along with bone settings, weight map assignments, IK settings, and IK goal and target objects.

I saved a RIG file after creating the bones and animation controls for Hamish, the main character in my books.

I'll show you briefly how that rig file is used for rigging a quadruped. The character we're rigging here is Jack the dog, modeled by William "Proton" Vaughan.



LightWave Layout: ImportHierarchy

Hierarchy will be parented to: ProtonJack01

Browse Rig File: rojects\Scenes\Chapters\ProtonJack.rig

Import Goals ? NO YES

Import Goal ItemShapes ? NO YES

Import Targets ? NO YES

Name Edit Method: None / Add Prefix / Add Suffix / Replace String

Replace this within Bone na ... Hamish

With this string: Jack

FIGURE 1. IMPORTING THE RIG

IMPORTING THE RIG

The first step is to import and adjust an existing rig. If your character is similar to the one the rig file was created from, adjusting the rig is very simple. Since we're converting the rig to a quadruped rig, there are a few more steps involved.

1. Select **Setup>Edit>Import** RIG to import the RIG file. Select **Yes** to all options, and choose **Replace String**, replacing the original character name with the new character name.
Figure1. Importing the Rig.

2. Select the object and select **Setup>Modify>Scale Hierarchy**, selecting **Yes** to the requester. Scale the rig up until the pelvis is just under the top of the back and press **Spacebar** to confirm the scale. Figure 2. Selecting the object allows you to scale the entire rig. Selecting a bone will scale just that bone hierarchy.

3. Re-position the skeleton and adjust the pelvis and hip bones. Figure 3.

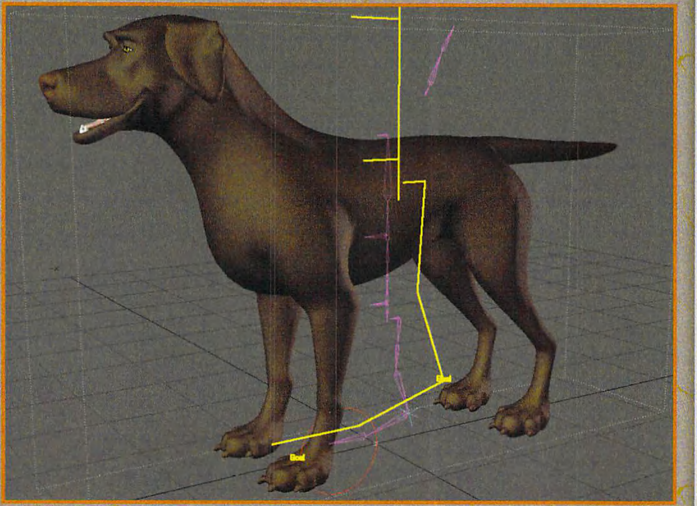


FIGURE 2– SCALING THE RIGH AND BONES

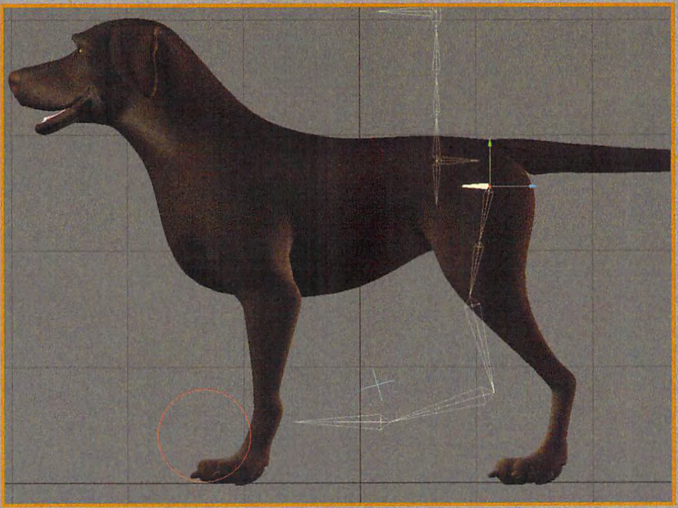


FIGURE 3– POSITIONING THE BONES

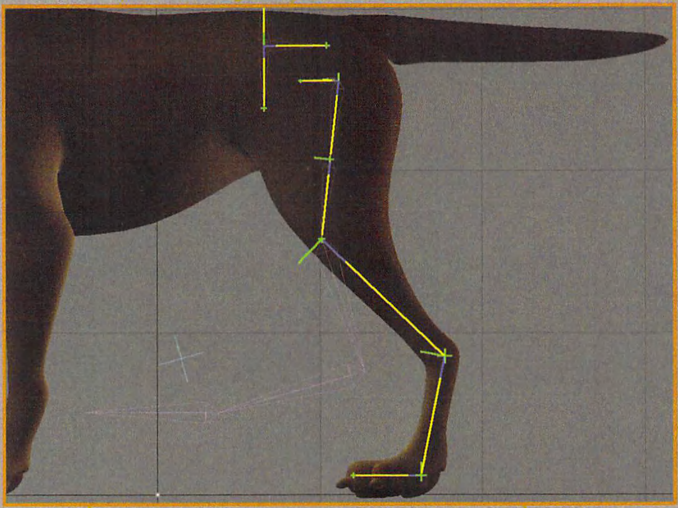


FIGURE 4– ADJUSTING THE LEG BONES

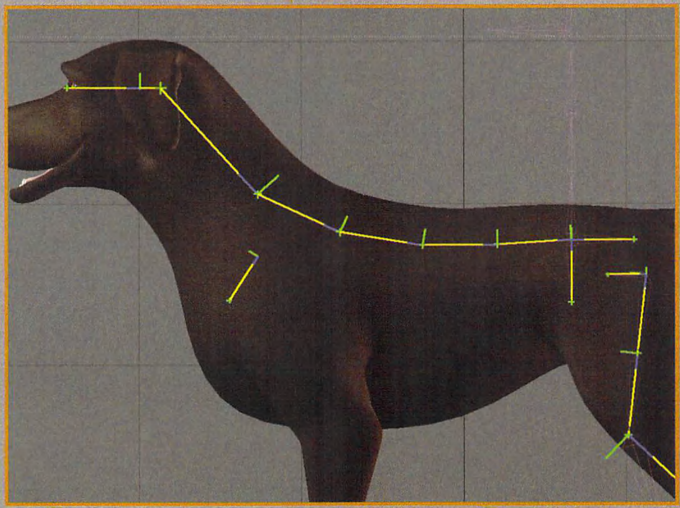


FIGURE 5– ADJUSTING THE BACK BONES

JOINT MOVE & TIP MOVE

Tip Move moves the tip and all the bones under the tip, just like moving skelegons. This is a quick way to reposition bones without affecting the orientation of bones lower in the hierarchy.

Joint Move moves the joints without moving the bones lower in the hierarchy, like dragging skelegons.

You can use both tools to adjust the bones. It's usually best to start with the major bone positioning with Tip Move then tweak the joint positions using Joint Move.

Selecting the object before Joint Move or Tip Move lets you adjust any joint in the skeleton. Moving a joint with the left mouse button (LMB) lets you move it anywhere. Moving a joint with the right mouse button (RMB) limits the move to the Z-axis of the bone.

1. Select Object mode and select **Setup>Modify>Tip Move (Ctrl-t)**. In the Right view, use RMB to drag the knee joint just inside the leg. Use LMB to drag the ankle and foot joints into place. When you get to the tip of the toe, use RMB to drag it just inside the toe geometry, keeping its angle. Figure 4.

2. Drag the joints of the back and head into the positions shown in figure 5. Press **Spacebar** to confirm the new bone positions.

3. Select the hip bone and move it in X so that the leg bones are in the center of the leg. Figure 6.

COPY HIERARCHY

We'll copy the leg hierarchy using **Copy Hierarchy** and reposition the bones for the arm. It's easier to do this than to have adjusted the original arm hierarchy or create a new hierarchy, as the leg already has the correct animation controls setup.

1. Select the upper leg bone and **Setup>Edit>Copy Hierarchy**. Choose **Yes** to Goals and Item Shapes and Replace String, replacing **Leg** with **Arm**. Figure 7.

2. From the Right view, move the upper arm bone to the top of the shoulder. Use Tip Move on the object and move the arm bones into place. Notice the new bone positions are quite different. Figure 8.

3. Move the shoulder bone in X so its base is just inside the shoulder.

4. Select **Tip Move** and from the Back view, move the first joint of the arm so that the lower bones are centered in the leg. Figure 9.

BONE SPLIT

Bone Split is very useful for creating bone chains quickly. All the new bones created by Bone Split inherit the bone settings, weight map assignments and IK settings from the original bone.

1. Select the upper arm bone and **Setup>Edit>Bone Split** into two (2)

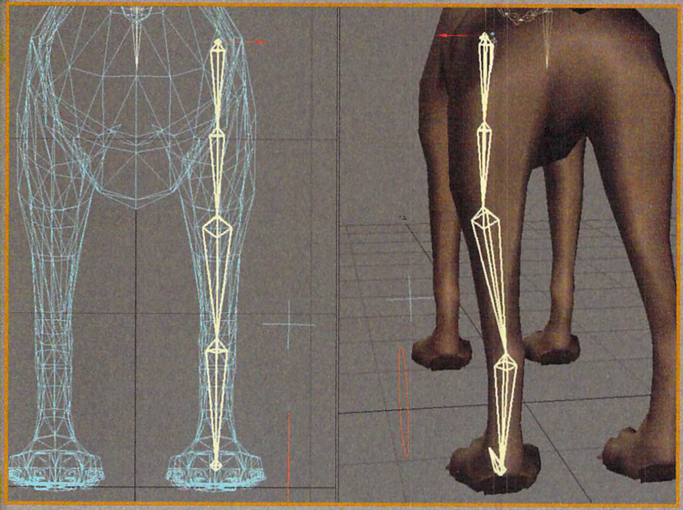


FIGURE 6– POSITIONING THE LEG HIERARCHY

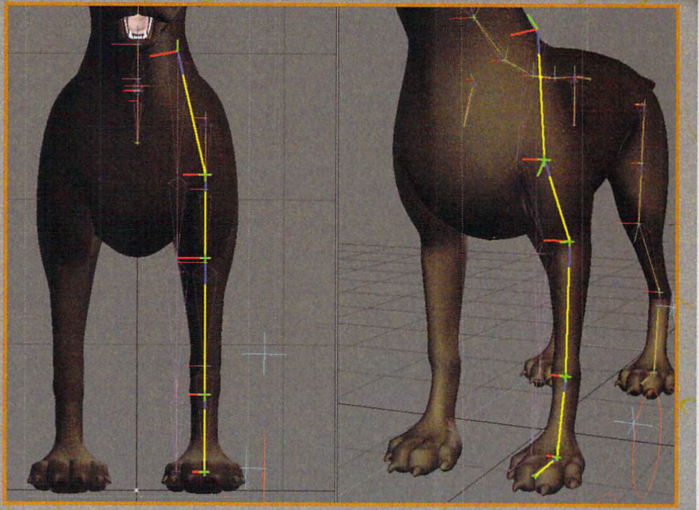
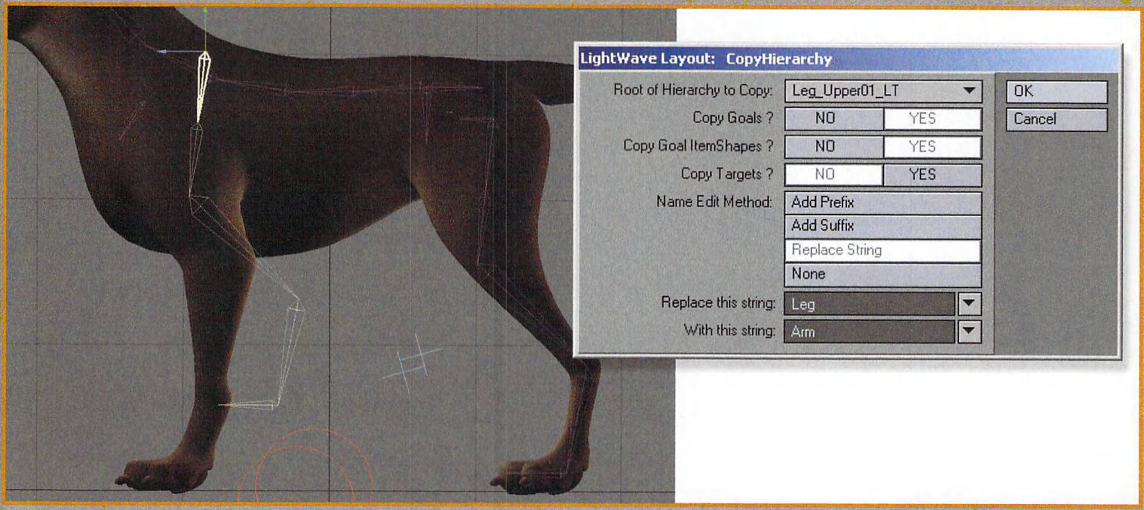


FIGURE 9– POSITIONING THE ARM HIERARCHY



LightWave Layout: CopyHierarchy

Root of Hierarchy to Copy: Leg_Upper01_LT

Copy Goals ? NO [✓ YES]

Copy Goal ItemShapes ? NO [✓ YES]

Copy Targets ? [✓ NO] YES

Name Edit Method: Add Prefix / Add Suffix / [✓ Replace String] / None

Replace this string: Leg

With this string: Arm

FIGURE 7– COPY HIERARCHY SETTINGS

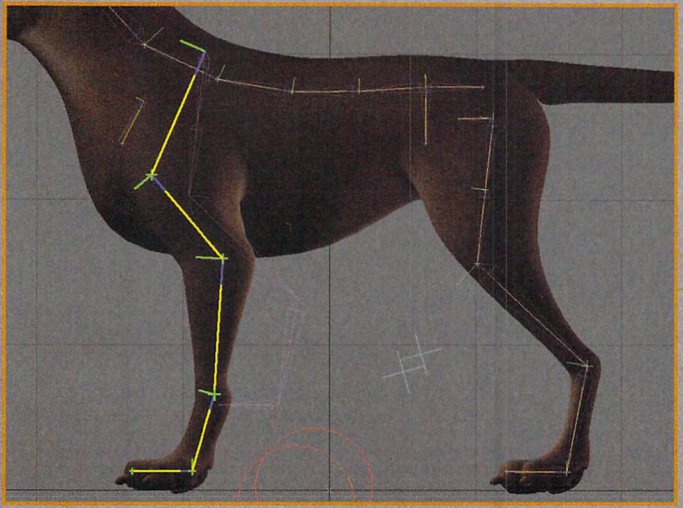
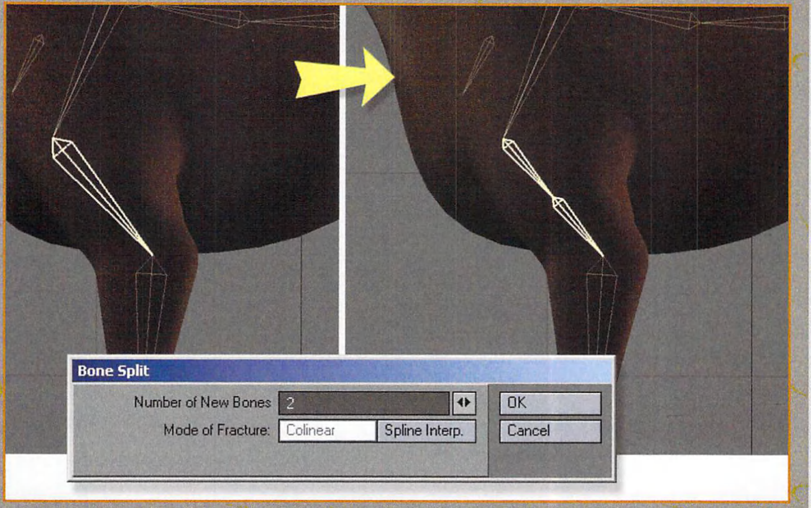


FIGURE 8– ADJUSTING THE ARM BONES



Bone Split

Number of New Bones: 2

Mode of Fracture: [✓ Colinear] Spline Interp.

FIGURE 10– SPLITTING THE UPPER ARM BONE CREATES A CONTROL BONE TO POSITION THE ELBOW

collinear bones. Figure 10.

2. Select the neck bone and **Bone Split** into three (3) Spline Interpolated bones. This creates the new neck bones in a nice, even curve between the bones on either side. Figure 11.

BONE TWIST

Bone Twist adjusts the orientation of the bones. This does the same thing as adjusting bank handles for skelegons. Using Bone Twist on a bone adjusts the orientation of the child bones.

1. Move the first ear bone into place, then use Tip Move on the object to move the other ear bones into place. Figure 12.

2. Select the first ear bone and select **Setup>Modify>Bone Twist (Ctrl-k)**. Adjust the handle so the pitch (the green disc) is facing the right direction. Figure 13. Now all the ear bones are properly aligned in the right direction.

3. Select the second ear bone and select Bone Twist (Ctrl-k). Adjust the handle so the pitch (the green disc) is facing the same direction as the pitch of the first ear bone.

MIRRORING THE RIG

Adjusting Skelegons in Modeler can be done using Symmetry, but there is no Symmetry mode in Layout. If you import a rig that has both sides included you should delete one side before adjusting, then mirror at the end to ensure the rig is symmetrical and to save having to repeat the adjustments for the other side.

1. Select the hip bone and select **Setup>Edit>Mirror Hierarchy**.

2. In the Mirror Hierarchy panel, change Mirror Goals and Mirror Item Shapes to YES, and Name Edit Method to Replace String, replacing _LT with _RT. Figure 14.

3. Select the first ear bone and Mirror Hierarchy using the same settings as before.

CREATING THE TAIL

You can use LightWave 3D 8's setup tools to create an IK chain for the tail quickly and easily.

CREATING THE BONES

By using Bone Split you can create a chain

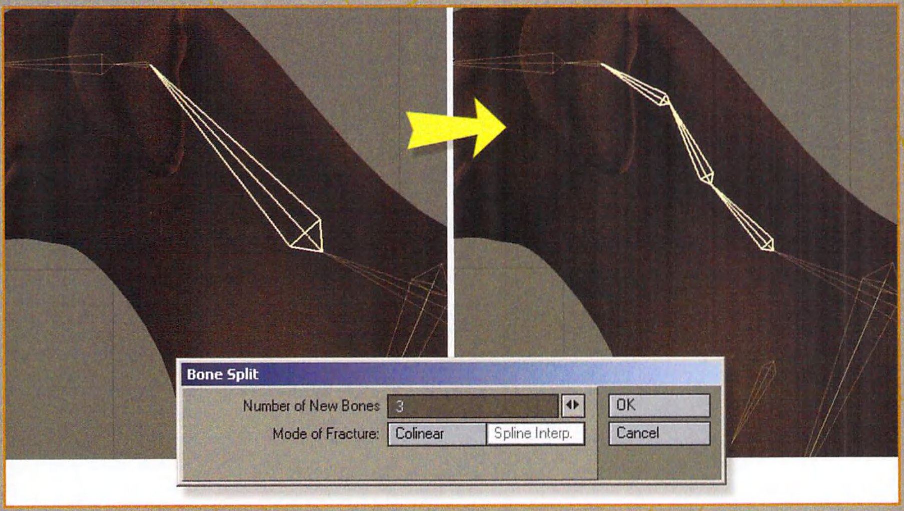

Bone Split
Number of New Bones: 3
Mode of Fracture: Colinear | Spline Interp.

FIGURE 11– CREATING THE NECK BONES

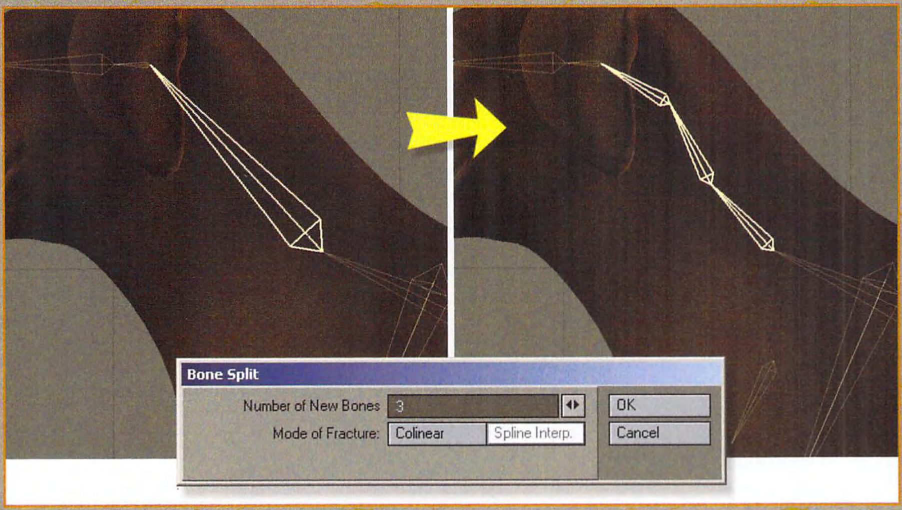

Bone Split
Number of New Bones: 3
Mode of Fracture: Colinear | Spline Interp.

FIGURE 12– NOTICE THE ROTATION ANGLES OF THE BONES AREN'T ALIGNED

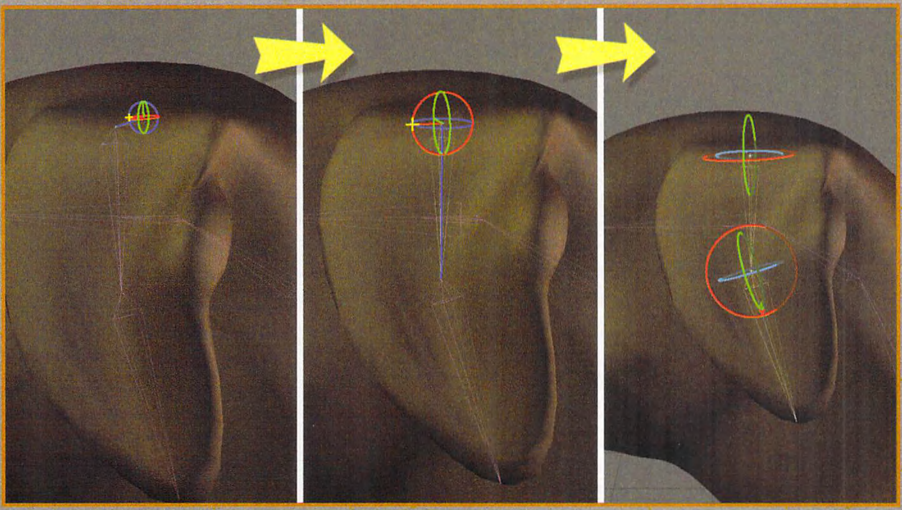


FIGURE 13– NOW ALL THE EARBONES ARE PROPERLY ALIGNED IN THE RIGHT DIRECTION

of bones for the tail, that all inherit the IK and other settings of the original bone.

1. Create a child bone of the pelvis called **Tail**.

2. Move the Tail bone to the base of the tail then **Tip Move** and use the RMB to drag the tip to the end of the tail. Figure 15.

3. Open Motion Options and set the Heading and Pitch controllers to **Inverse Kinematics**. Figure 16.

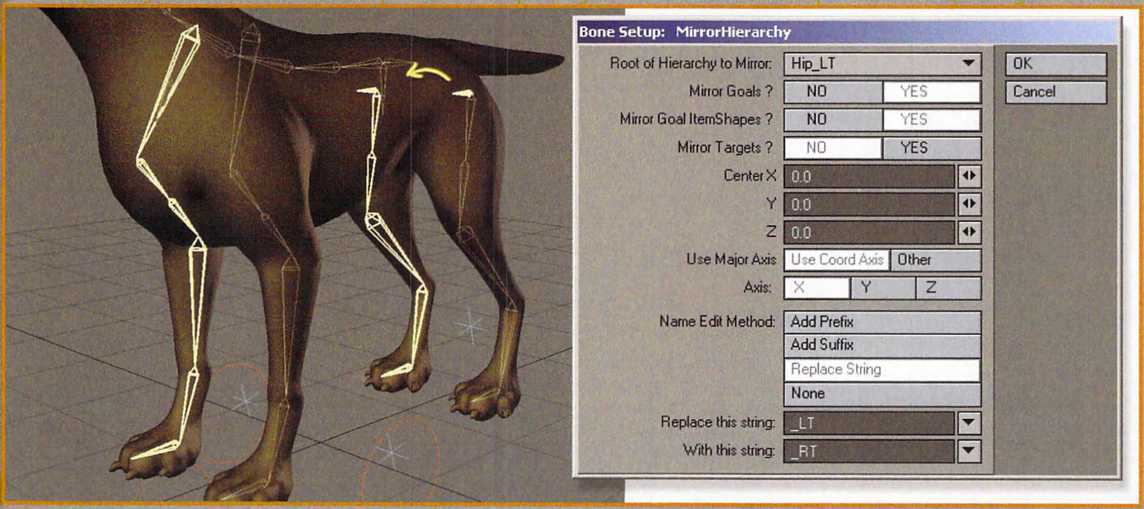

Bone Setup: MirrorHierarchy
Root of Hierarchy to Mirror: Hip_LT
Mirror Goals ? NO / YES
Mirror Goal ItemShapes ? NO / YES
Mirror Targets ? NO / YES
Center X 0.0
Y 0.0
Z 0.0
Use Major Axis: Use Coord Axis / Other
Axis: X / Y / Z
Name Edit Method: Add Prefix / Add Suffix / Replace String / None
Replace this string: _LT
With this string: _RT

FIGURE 14– MIRROR HIERARCHY SETTINGS

4. Select **Bone Split** and create six colinear bones. Figure 17. Notice the new tail bones retain the properties and the IK settings of the original bone.

5. Select the last tail bone and **Setup>Add>Child Bone** (=) calling the new bone **Tail_7**. Figure 18.

6. Add two nulls called Jack_Tail_Goal and Jack_Tail_Bend.

7. Position Jack_Tail_Goal at the base of the Tail_7 bone, and position Jack_Tail_Bend at the base of the Tail_4 bone. Figure 19 (Next Page).

IK SETTINGS

There isn't much to do here, as most of the IK settings have been inherited from the original bone. We just need to assign the IK Goals to the right bones.

5. Select Tail_7 and set Goal Object to Jack_Tail_Goal with Full-time IK and Goal Strength of 100. Figure 20 (Next Page).

6. Select the Tail_4 bone and set Goal Object to Jack_Tail_Bend with Full-time IK and Goal Strength of 50. Figure 21 (Next Page).

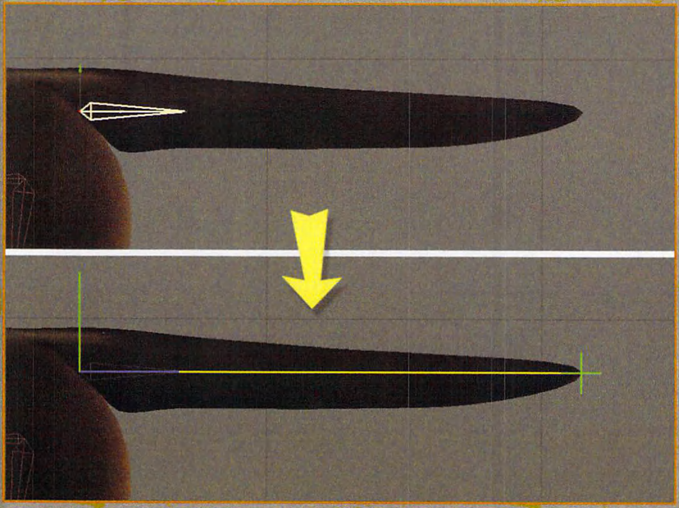


FIGURE 15– CREATING THE INITIAL TAIL BONE

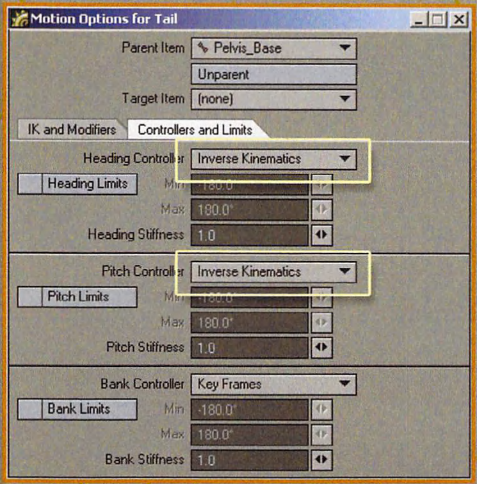

Motion Options for Tail
Parent Item: Pelvis_Base
Target Item: (none)
Heading Controller: Inverse Kinematics
Min -180.0°
Max 180.0°
Heading Stiffness 1.0
Pitch Controller: Inverse Kinematics
Min -180.0°
Max 180.0°
Pitch Stiffness 1.0
Bank Controller: Key Frames
Min -180.0°
Max 180.0°
Bank Stiffness 1.0

FIGURE 16– IK SETTINGS FOR THE TAIL BONE

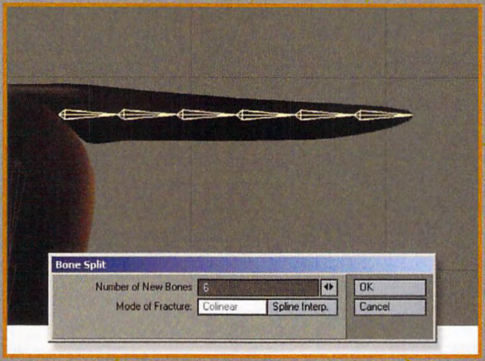

Bone Split
Number of New Bones 6
Mode of Fracture: Colinear / Spline Interp.

FIGURE 17–THE NEW TAIL BONES

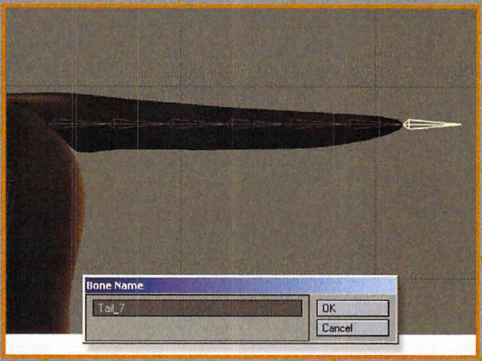

Bone Name
Tail_7

FIGURE 18– THIS BONE IS THE IK GOAL FOR THE TAIL

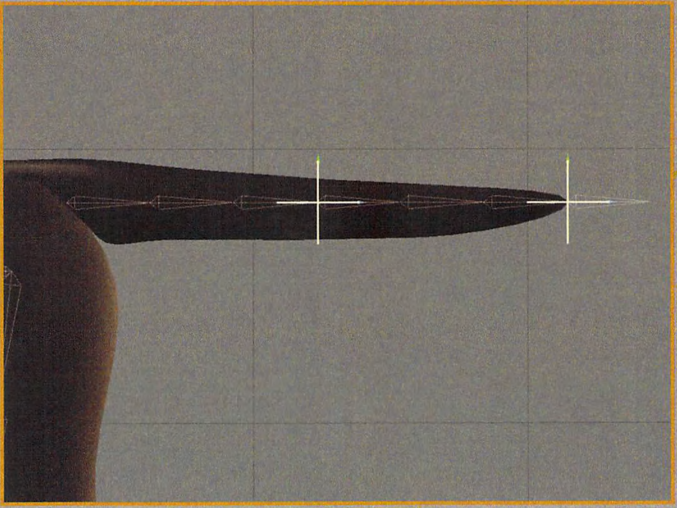
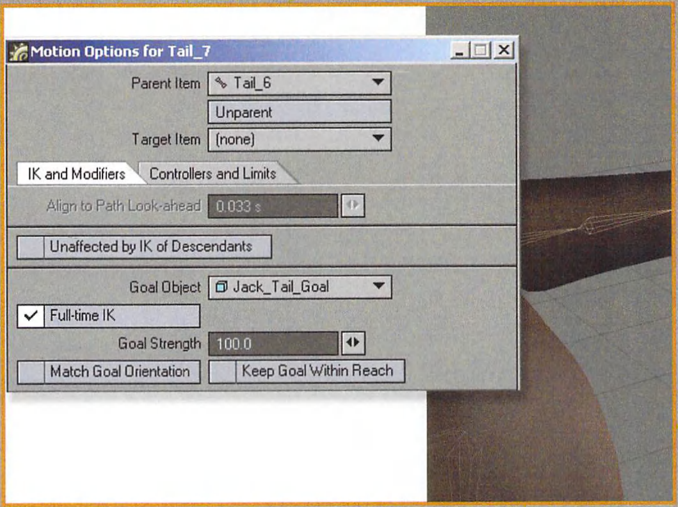


FIGURE 19– ADDING THE IK CONTROLS



Motion Options for Tail_7

Parent Item: Tail_6

Unparent

Target Item: (none)

IK and Modifiers | Controllers and Limits

Align to Path Look-ahead: 0.033 s

☐ Unaffected by IK of Descendants

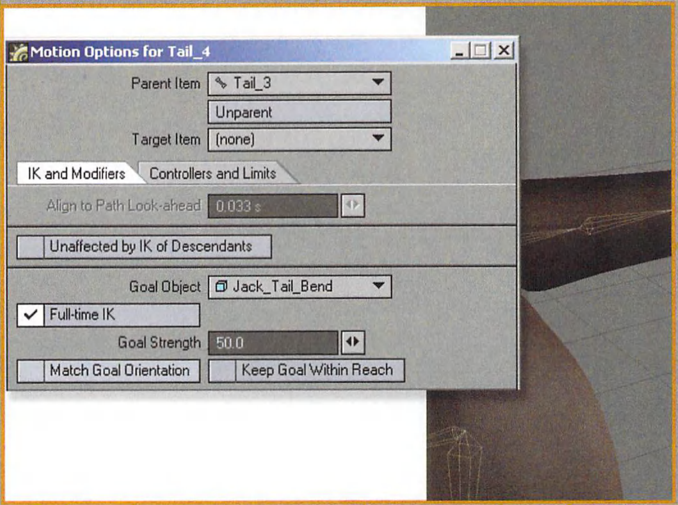
Goal Object: Jack_Tail_Goal

☑ Full-time IK

Goal Strength: 100.0

☐ Match Goal Orientation ☐ Keep Goal Within Reach

FIGURE 20– IK SETTINGS FOR THE TIP



Motion Options for Tail_4

Parent Item: Tail_3

Unparent

Target Item: (none)

IK and Modifiers | Controllers and Limits

Align to Path Look-ahead: 0.033 s

☐ Unaffected by IK of Descendants

Goal Object: Jack_Tail_Bend

☑ Full-time IK

Goal Strength: 50.0

☐ Match Goal Orientation ☐ Keep Goal Within Reach

FIGURE 21– IK SETTINGS FOR THE MIDDLE

TESTING THE RIG

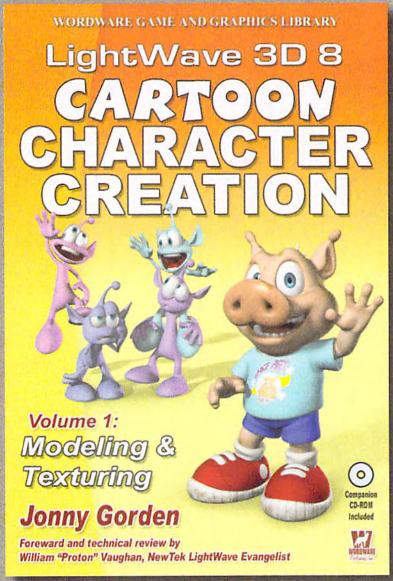
Now the basic rig is ready for testing.

1. Select all the bones and press "r" to rest and activate them.

2. Enable IK and Go to frame 10 and test the rig by posing the character. Figure 22.

So you can see that LightWave 3D 8's new Setup tools make creating and re-using character rigs very easy. Converting an existing rig from one character to another can all be done in layout with very few steps, just load the rig, adjust the bone positions, mirror and you're done.

For the complete Quadruped rigging tutorial and much more, be sure and check out my new books LightWave 3D 8 Cartoon Character Creation volumes 1 & 2, and happy rigging.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Jonny Gorden
Foreward and technical review by
William "Proton" Vaughan, NewTek LightWave Evangelist
Companion CD-ROM Included
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Lightwave 3D 8 Cartoon Character Creation volumes 1 & 2 from Wordware Publishing teach proven methods of creating 3D cartoon characters for animation. This two volume set is the most complete, in-depth and accurate resource available for character creation and animation using LightWave 3D. For a special discount and free shipping inside the continental US pre-order now at www.wordware.com/cartoon. International customers can pre-order from Amazon.com or wherever good books are sold.

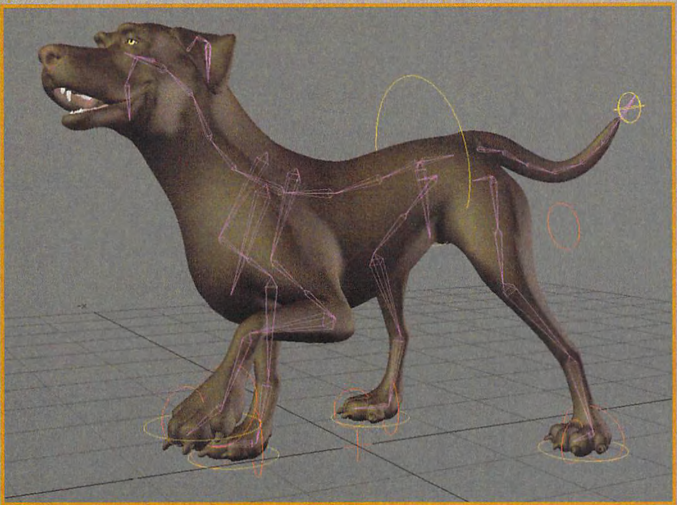

FIGURE 22– A QUICK TEST POSE

LightWave 3D 8 Cartoon Character Creation - Volume 1: Modeling and Texturing includes both general theory and comprehensive tutorials for every aspect of modeling and texturing 3D characters, the fundamental building blocks of character animation. It also includes a bonus "complete introduction to character creation" including modeling, surfacing and rigging.

This book includes:

- Concept design & analysis.
- Subdivision character modeling.
- Complex UV Mapping techniques made easy.
- Surfacing and surface attributes.
- Texturing using gradients and procedural textures.
- Image map creation and application.

LightWave 3D 8 Cartoon Character Creation - Volume 2: Rigging & Animation includes both general theory and comprehensive tutorials for every aspect of rigging and animating 3D characters. This book describes multiple rigging techniques, advanced and alternate animation controls, using dynamics, and includes a comprehensive explanation of facial animation, overlooked in other books.

This book includes:

- Rigging - weight mapping, bone creation, IK and deformations.
- Advanced rigging techniques - expressions, FK/IK blending and more.
- Quadruped rigging.
- Creating morphs for facial animation and lip-sync.
- Animation - using the animation controls, animating with IK and more.
- Facial animation - expressions, lip-sync and advanced morph controls.
- Dynamics for secondary body motion and clothes.

Included in both books are descriptions of useful third party plug-ins, many of which are used in the tutorials. The accompanying CDs include all the featured third party plug-ins, example files for the tutorials, all the illustrations in full color, and much more...

JONNY GORDEN HAS WORKED AS A CG ANIMATOR SINCE 1990 AND IS CONSIDERED ONE OF THE INDUSTRY'S LEADING CHARACTER DESIGNERS. IN 1997, JONNY FORMED HIS OWN PRODUCTION COMPANY, ZERO GRAVITY ENTERTAINMENT, SOON AFTERWARDS CREATING "X-MEN: THE RAVAGES OF APOCALYPSE," ONE OF THE FIRST 3D GAMES TO EXCLUSIVELY USE LIGHTWAVE 3D. THROUGH ZERO GRAVITY ENTERTAINMENT, JONNY CONTINUES TO PRODUCE 3D ANIMATION FOR CLIENTS AROUND THE GLOBE AND DEVELOP NEW AND EXCITING TECHNIQUES FOR CHARACTER ANIMATION. JONNY IS THE AUTHOR OF THE "LIGHTWAVE 3D 8 CARTOON CHARACTER CREATION" TWO-VOLUME SET, AND A CONTRIBUTING AUTHOR ON "LIGHTWAVE 3D 8 1001 TIPS AND TRICKS," FROM WORDWARE PUBLISHING.

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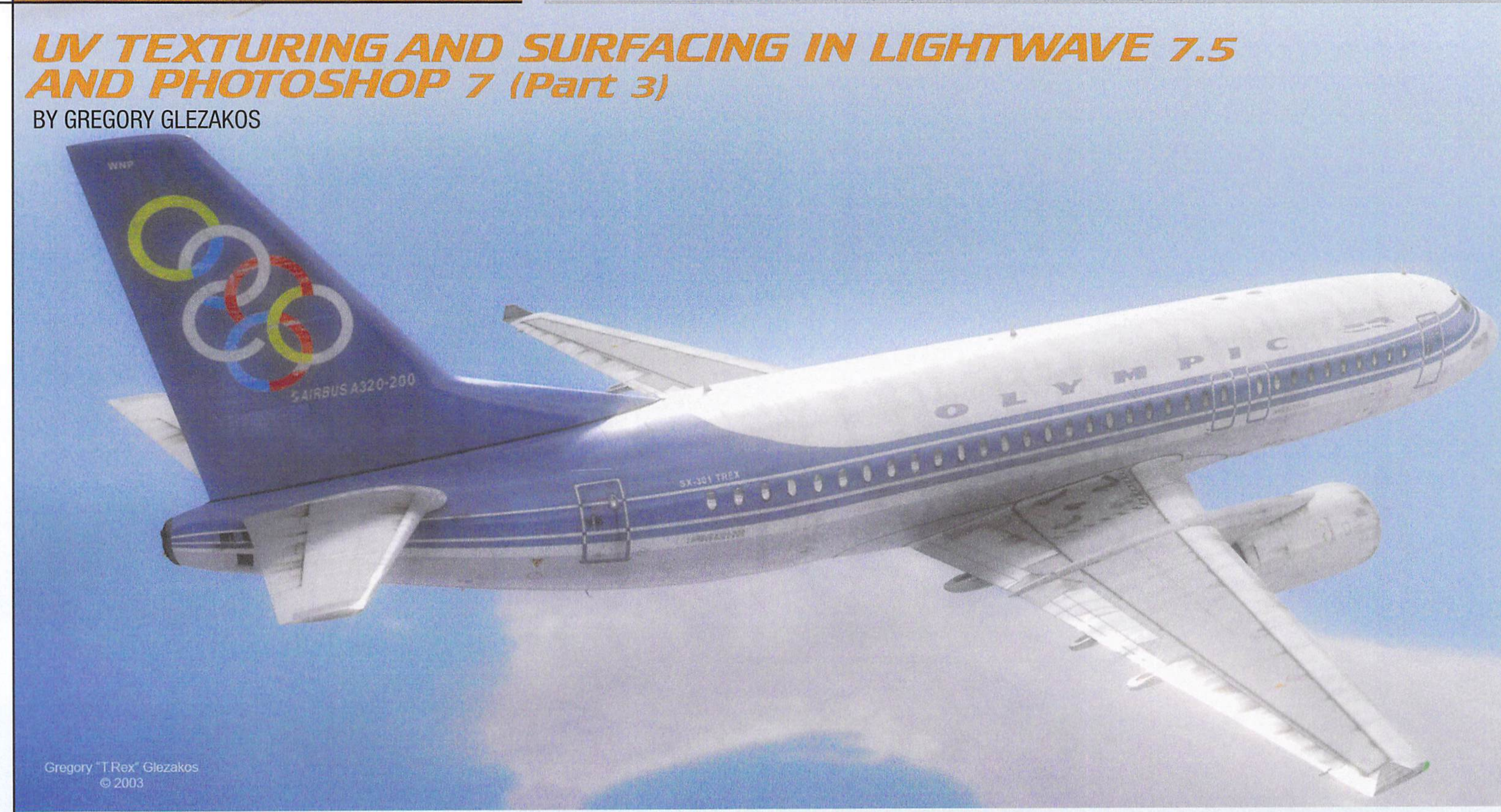
UV TEXTURING AND SURFACING IN LIGHTWAVE 7.5 AND PHOTOSHOP 7 (Part 3)

BY GREGORY GLEZAKOS



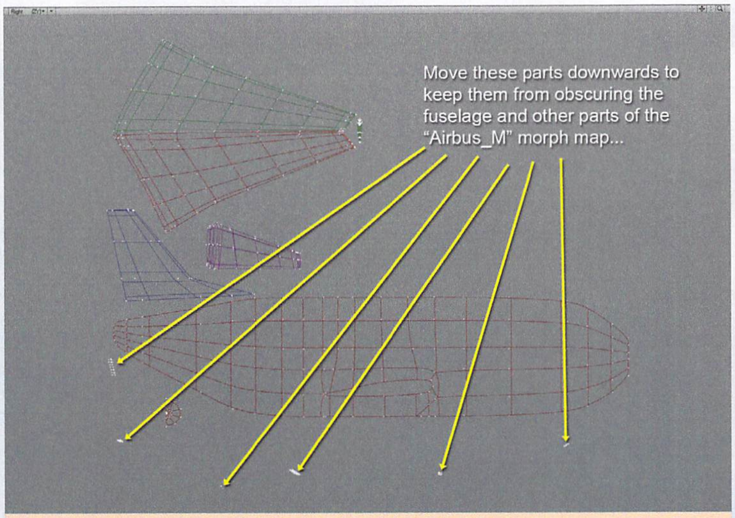
INTRODUCTION

Hello and welcome to the third part of a series of tutorials about creating UVs and painting textures for an airliner like the one above.

For those of you who have lost the two previous issues, consider ordering them online in order to catch up with the pace and have a complete picture of the series. You also need to download the zip file below, which is the aircraft object, a grid map and some free l-scripts, available at the Keyframe site (http://www.keyframemag.com). Those of you who downloaded the aircraft while reading the previous issues, get it again, for this time the aircraft model is once more updated with the UVs and morph maps we created last time and one more free and cool plug-in, called "Mesh Reknitter" from 3DD. So far, we've created UVs for the fuselage and all the wings. In this tutorial, we're going to complete the UV creation for the rest of the aircraft parts and finally "polish" both texture and morph map, as single and compact maps for the aircraft. Go to layer 5 to see all the "Small Details" of the aircraft, like lights, pitot tubes, etc.

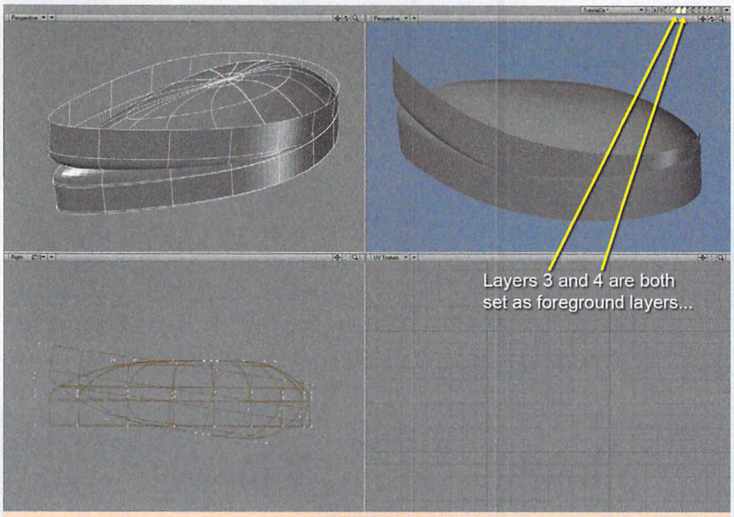
SMALL DETAILS

It's very easy to create UVs for these parts and some of them actually don't need UV mapping at all, like the Antistatic trails and Pitot tubes. For this, we can move those parts in layer 1. At the Polygon Statistics panel, select the Parts called "Antistatics" and "Pitots." They are so small that they can get away with only surface attributes and without any texture mapping, other than perhaps procedurals. Press "q" to assign them a new surface called "Metal_Parts." At the Surface Editor, copy the attributes of "Default" surface onto the new surface. Cut the polygons, go to layer 1, press "-" to hide everything, and paste them here. Select all polygons, unhide everything, and activate the "Airbus_M" morph map. Move the selected polygons downwards in a Right view, to keep the morph map with no overlapping parts, like in Pic01, and use the Set Value tool to flatten them in X-axis at 0 meters.


Move these parts downwards to keep them from obscuring the fuselage and other parts of the "Airbus_M" morph map...

PIC 01– MOVE THE SELECTED POLYGONS DOWN TO PREVENT OVERLAP

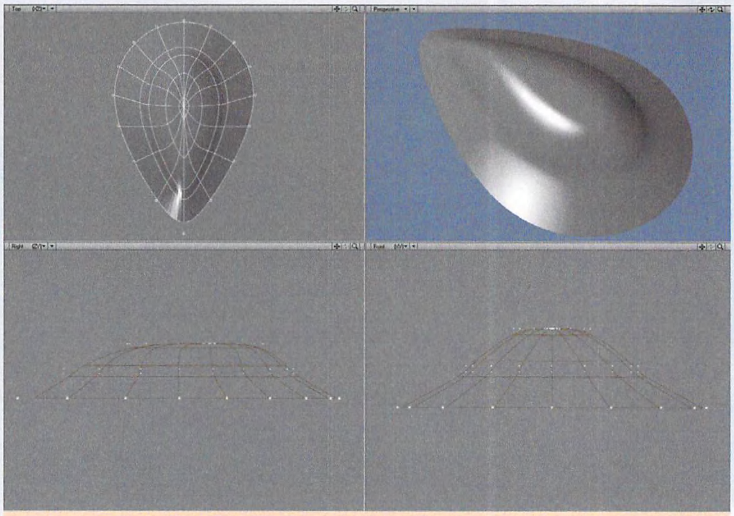
Go back to layer 5 and assign the "Airbus" surface to all polygons. In polygon selection mode, use the Polygon Statistics panel again to select the "Caps" part and press "=" to hide all but what is selected. You'll see three half "Caps." Cut them all and paste them in layer 4, which should be an empty layer. In order to create UVs for them properly, first we have to make their other side. Hit "Shift + v," then "n" to open the numeric panel and mirror all three "Caps" in X-axis, at origin's center with merge points "On." We are going to make these "Caps" as if they were a single object, in order to create a single UV map for them all. We can do this through the use of a morph map and BG Conform tool.



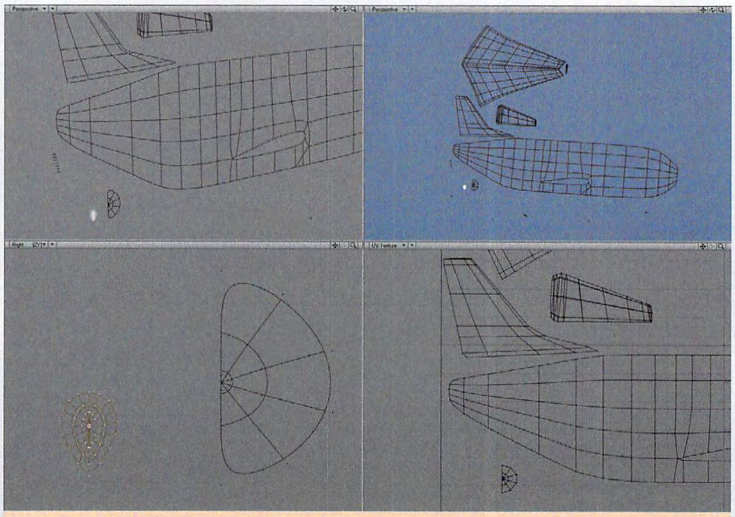
PIC 02– MOVE THE SELECTED POLYGONS DOWN TO PREVENT OVERLAP

Set layer 1 as background and 4 as foreground and you'll see that we have two "Caps" on top of the fuselage and another one underneath it. Cut the one underneath and paste it in layer 3. With the "Airbus_M" morph map still activated, work on both layers 3 and 4 as foreground layers; select all the polygons of each "Cap" at a time and hit "F2" to center them to the origin. (Pic02). We have to make sure that the points of all three "Caps" are at the exact same location, which they are not. To do that, work only on layer 4; deactivate the "Airbus_M" morph map, so it's easier to select one of the two "Caps." On a Right view, select the left side "Cap," cut it, and paste it in layer 2. Activate the "Airbus_M" morph map again. Set layer 4 as foreground and 2 as background. Go to the Modify tab and click on the BG Conform button and you'll see that the "Cap" in layer 4 moved in a position identical to the one at layer 2. Now, set layer 3 as foreground and 2 as background. The "Cap" in layer 3 needs to be rotated first, before we use the BG Conform tool, to place it exactly over the "Cap" in layer 2. For that, press "r" twice in a Right view window and then press it two more times in a Top view. Then, use the move, rotate, and "F2" tools to minor adjust and orient it as much as possible, like layer 2. Finally, use the BG Conform tool. If for some reason your "Cap" gets distorted when you use the BG Conform tool, then you probably haven't placed its points exactly on top of the background layer's points. Undo and try again. You can zoom in the views in order to make accurate adjustments. When finished, cut all polygons from layers 2 and 3 and paste them in layer 4. When the "Airbus_M" morph map is activated, you should see only one "Cap," but when it's not, you should see all three "Caps" in their "base" position.

Make sure the "Airbus_M" morph map is activated and select the point row of the base of the "Caps" and use the stretch tool to stretch it through the Top view, 180% horizontal and 140% vertical (Pic03). Deselect all points and use the Set Value tool to flatten all polygons on Y-axis at 0 m. Select layer 1 as background and 4 as foreground and on a Right view, press the "e" shortcut once, then on a Top view, press "e" again; we've just oriented the "Caps" the same way as the rest of the objects in the "Airbus_M" morph map. Move the "Caps" and place them next to the fuselage's nose polygons, like in Pic04.

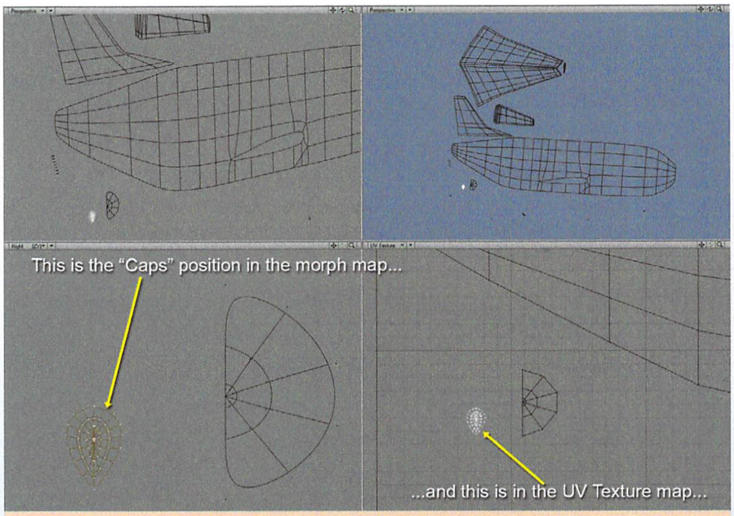


PIC 03– STRETCH THE AIRBUS_M MORPH MAP THROUGH THE TOP VIEW



PIC 04– MOVE THE "CAPS" AND PLACE THEM NEXT TO NOSE POLYGONS

Now, we're ready to create UVs for the "Caps." Leave layer 1 as background and set layers 4 and 9 as foreground. Activate the Make UVs tool. Same as before, texture name is the "Airbus_T," map type is Planar, Axis is X and the rest of the settings are Automatic. Hit Enter. As you see, the generated UVs for the "Cap" are somewhat close to the fuselage's UVs. We can move them in the UV Texture window and place them, like where we placed them for the morph map; next to fuselage's nose polygons UVs. To do that, deactivate layer 9 from being a foreground layer (hit "Shift + 9" to do that) and then in the UV Texture window, move the "Cap" accordingly to resemble the morph map (Pic05, Next Page). Deactivate the "Airbus_M" morph map now.

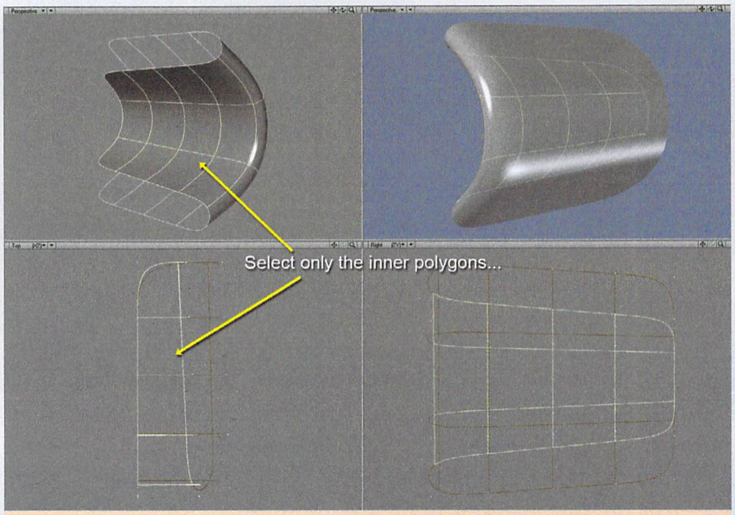

This is the "Caps" position in the morph map...
...and this is in the UV Texture map...

PIC 05– MOVE THE CAPS TO RESEMBLE THE MORPH MAP

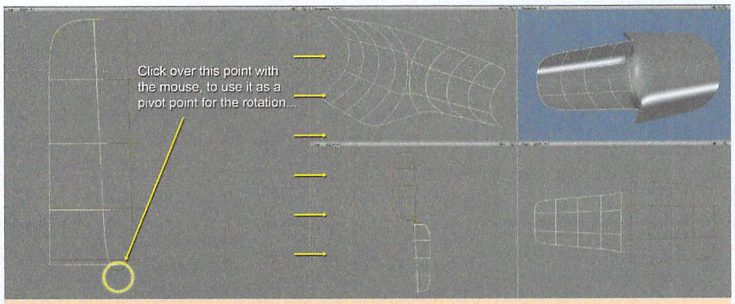
Since we created the other side of these "Caps" in order to create their UVs, we will cut them from layer 4 and paste them in layer 2 and not in layer 1, because in that layer we still have to create the mirror sides for the aircraft and its parts.

Now, let's move on to the rest of the parts of layer 5. There are three more parts in this layer: the "Exhaust," the "Fins," and the "Lights." Because the "Fins" and two of the three "Lights" are the same objects oriented differently throughout the fuselage, we can create their UVs with the method we used for the "Caps." There's no point in going through that method again, so I leave that to you. When you finish the UVs for the six "Fins" and the two "Lights," move them in to layer 2.

A different method applies for the "Exhaust" part and one of the "Lights" parts; the one right under the exhaust. Let's create UVs for the "Exhaust" first. Go to layer 5 and select the "Exhaust" part through the Polygon Statistics panel. Cut it and paste it in layer 4. Activate the "Airbus_M" morph map. In layer 4 now, select the inner polygons of the exhaust, as in Pic06. In a Top view, rotate the selected polygons 180 degrees, with pivot mode and by clicking over the area shown in Pic07.

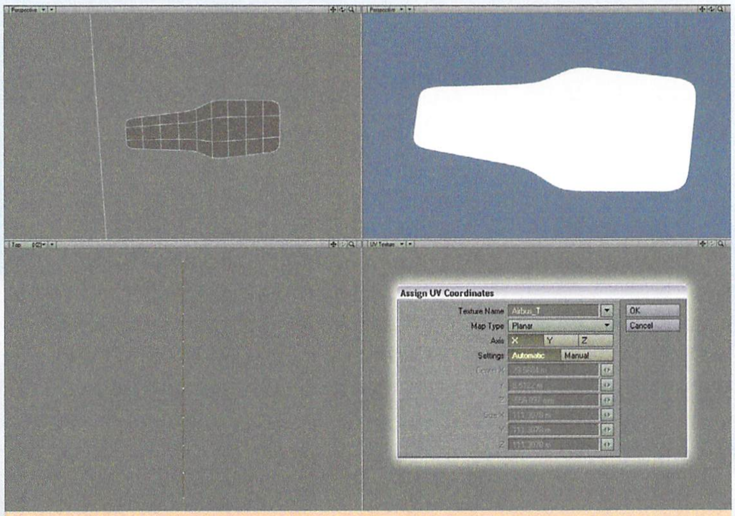

Select only the inner polygons...

PIC 06– SELECT THE INNER POLYGONS OF THE EXHAUST


Click over this point with the mouse, to use it as a pivot point for the rotation...

PIC 07– ROTATE THE SELECTED POLYGONS 180°

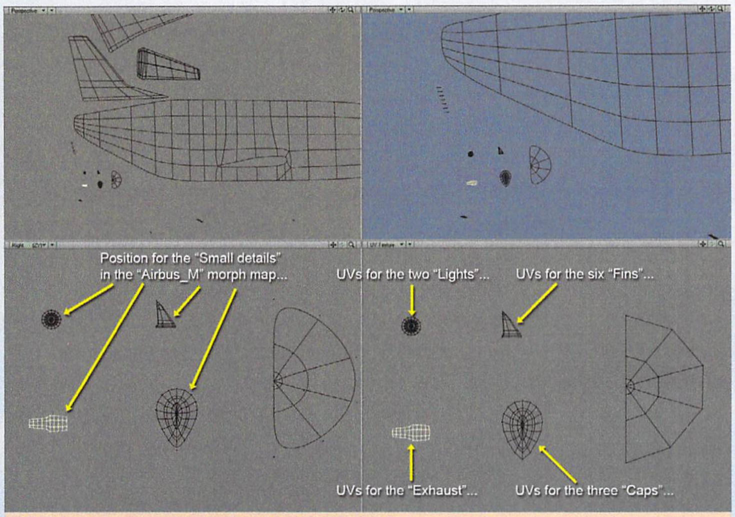
Press "t" to move the selected points and then "n" to bring up the numeric panel. On Z, offset type "-100 mm" and click on Apply. Deselect all polygons and use the Set Value tool to flatten everything in X at 0 m, as usual. Select layers 4 and 9 as foreground and activate the Make UVs tool. Again, settings are as usual: "Airbus_T", Planar, X-axis, Automatic settings (Pic08).


Assign UV Coordinates

Texture Name: Airbus_T
Map Type: Planar
Axis: X
Settings: Automatic

Y
Z
Manual
OK
Cancel

PIC 08– SETTINGS ARE AS USUAL

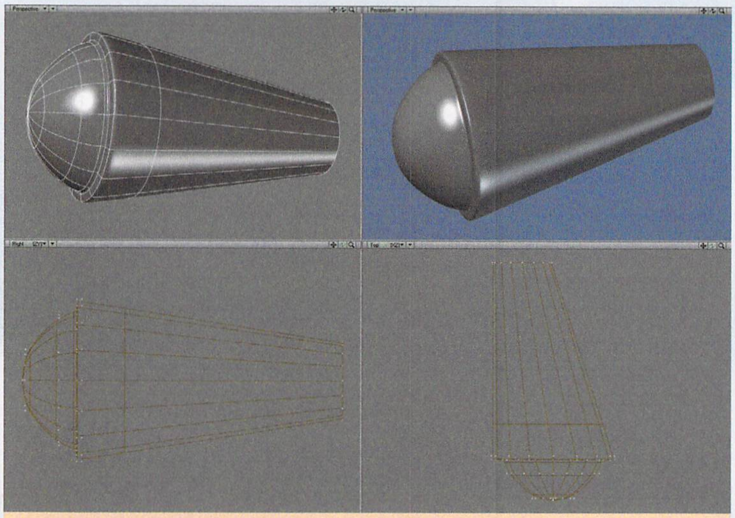

Position for the "Small details" in the "Airbus_M" morph map...
UVs for the two "Lights"...
UVs for the six "Fins"...
UVs for the "Exhaust"...
UVs for the three "Caps"...

PIC 09– THE UV TEXTURE WINDOW

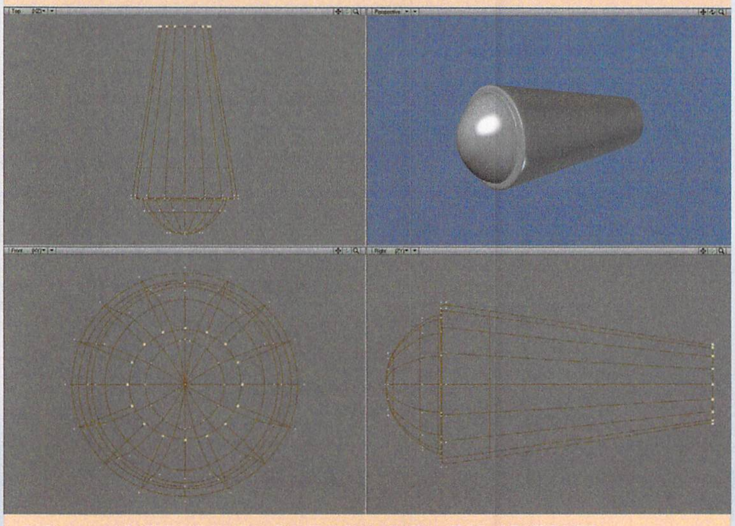
Press "Shift + 9" to close layer 9 from being in the foreground, and while working in layer 4, press "Alt + 1" and "Shift + Alt + 2" to set layers 1 and 2 as background. Move the exhaust polygons in a Right view and position them next to the fuselage's nose polygons. Do the same in the UV Texture window (Pic09). That's it! The "Exhaust" UVs and morph map are ready.

As you see from Pic09, for the "Fins" and the two "Lights" we've already created UVs and added them to the "Airbus_M" morph map, following the same method we did for the "Caps." If you try to create them, try to make them look like they do in Pic09. The process is the exact same as for the "Caps," but if for some reason you can't get the same results, don't despair. In the next part of the tutorial, you'll be able to download the object with the morph map and its UVs completed.

Cut the "Exhaust" polygons from layer 4 and paste them in layer 1. Go to layer 5 to create the UVs for the third light; it's the one underneath the exhaust (Pic10). Right now, this should be the only part existing in layer 5, so press "a" to fit it in all views. Since this light is a cylindrical object, we are going to create a cylindrical UV map for it. This is the first time we've created a cylindrical map and will use it without a morph map and the "UVs-through-Morph" technique.

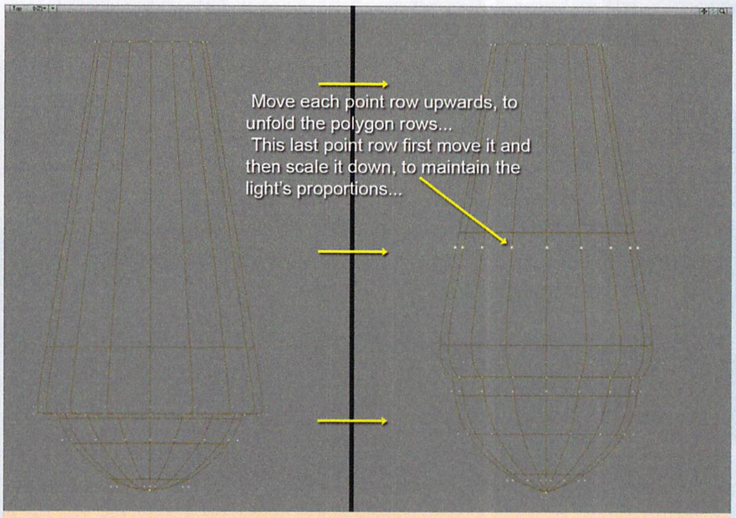


PIC 10– THE THIRD LIGHT



PIC 11– MOVE THE END POINT ROW UNTIL IT IS CENTERED

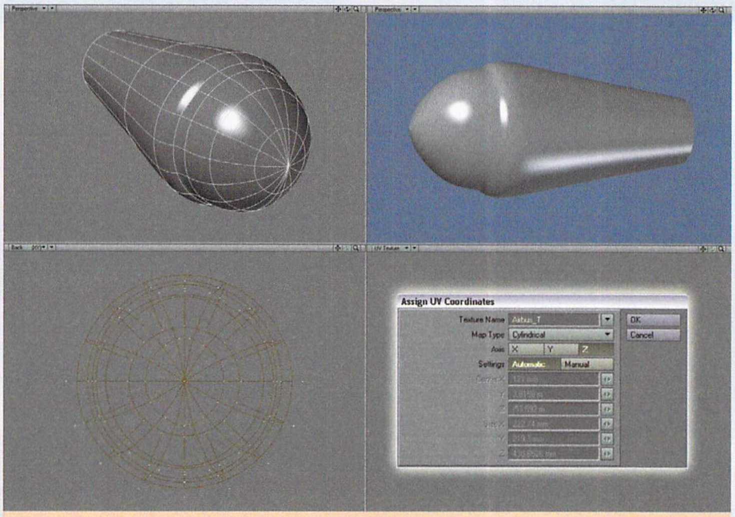
Activate the "Airbus_M" morph map. Select the end point row on the bottom of the light. On a Front view move them, until they are centered, like in Pic11. Now, select each point row, one at a time, and in a Top view move them upwards until you get Pic12. The goal is to expand the polygon rows for cleaner UV creation.



Move each point row upwards, to unfold the polygon rows...

This last point row first move it and then scale it down, to maintain the light's proportions...

PIC 12– IN TOP VIEW, MOVE THE POLYGONS UPWARD AS SHOWN HERE



Assign UV Coordinates

Texture Name: Airbus_T

Map Type: Cylindrical

Axis: Z

Settings: Automatic

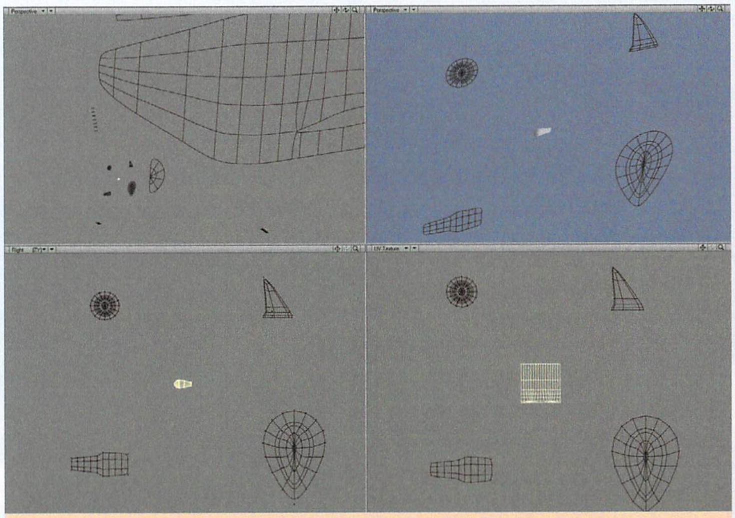
PIC 13– SETTINGS SHOULD BE AS ABOVE BEFORE GENERATTING THE UVs

Activate the Make UVs tool. This time settings should be as in Pic13. Texture name: "Airbus_T," Map Type: Cylindrical, Axis: Z, Settings: Automatic. Now, the generated UVs are spread throughout the UV space. We don't want such a huge map for our tiny light, so we'll scale them down until they reflect the true size of the light, in pair with the aircraft.

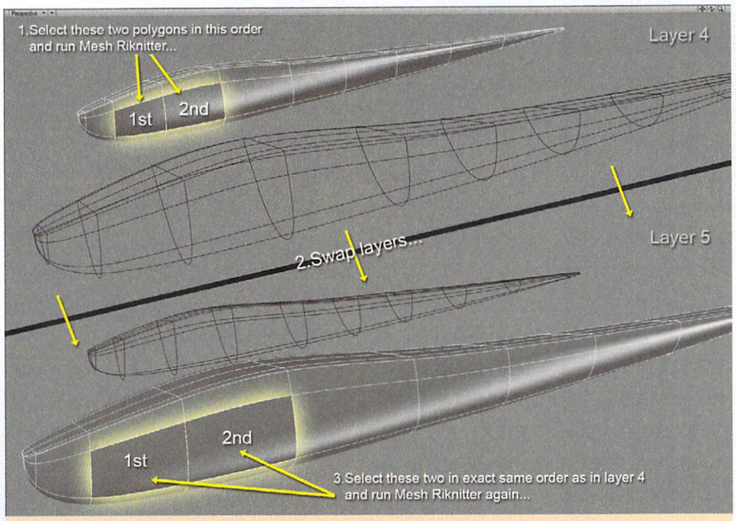
To do this, un-weld all points and set layer 1 and 2 as background. In the UV Texture window, scale the light's UVs until they are as small as the exhaust's UVs. Position them in between the other "Small Parts" and merge back all points (Pic14, Following page). Also, in a Right view, position the light in between the other "Small Parts" and flatten it on X-axis at 0 m; don't forget we still have active the "Airbus_M" morph map. This is to make sure that the morph map has no overlapping polygons.

For this light and later for some other parts, we won't be using the "UVs-through-Morph" or the "Front-Projection-UVs" technique. In the next part, we'll learn how to combine the UV map generated from Layout with the one generated straight out of Modeler; all in one big, nice and clean UV map. To complete the "Small Details" UVs work, cut all polygons from layer 5 and paste them in layer 1. Remember! Layer 1 is the layer where we place objects that need to be mirrored in X-axis and in layer 2, those that are already mirrored and completed.

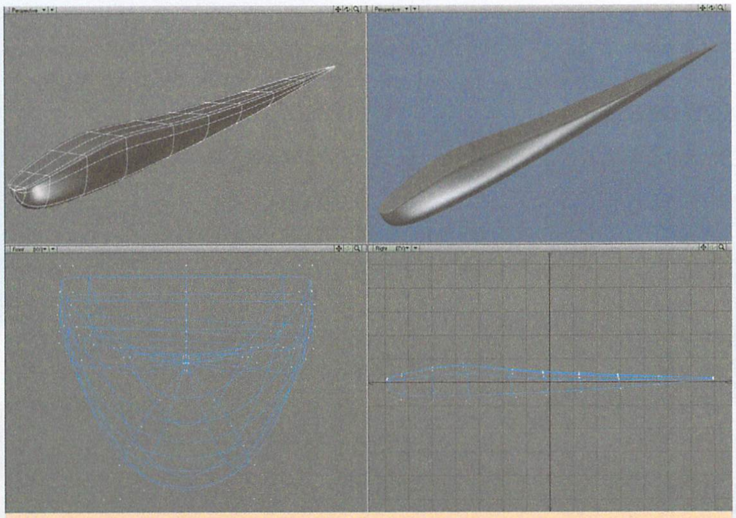
Now, many might say that all the "Small Details" are so small that they don't need UVs or texture maps; a simple color might be enough. Maybe yes, but the scope of these tutorials is to learn all the possible techniques to create UVs for any given object. The method we used for this small light will be used for the fuel "Tanks," the "Engine," and later on, its "Holder." Let's deal with the "Tanks" first.



PIC 14– SCALE THE LIGHT'S UVS AND MERGE BACK ALL POINTS


1.Select these two polygons in this order and run Mesh Riknitter...
Layer 4
1st
2nd
2.Swap layers...
Layer 5
1st
2nd
3.Select these two in exact same order as in layer 4 and run Mesh Riknitter again...

PIC 15– RUN THE "MESH REKNITTER" PLUG-IN ON POINTS SHOWN

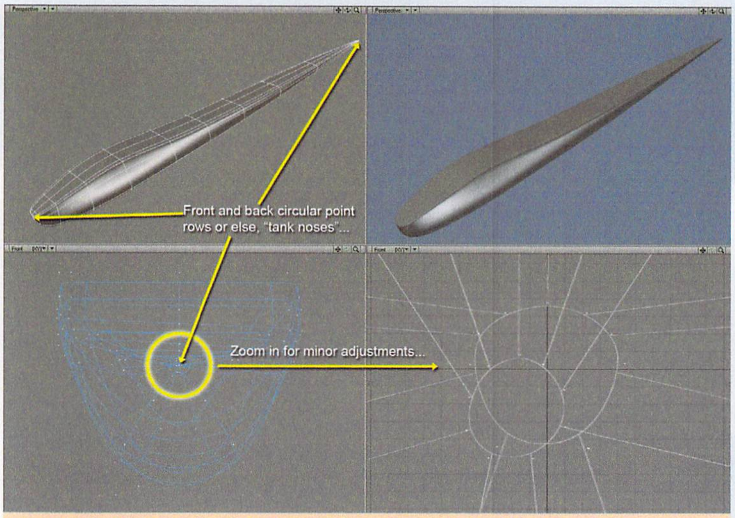


PIC 16– ACTIVATE THE ROVE TOOL AND PRESS F2

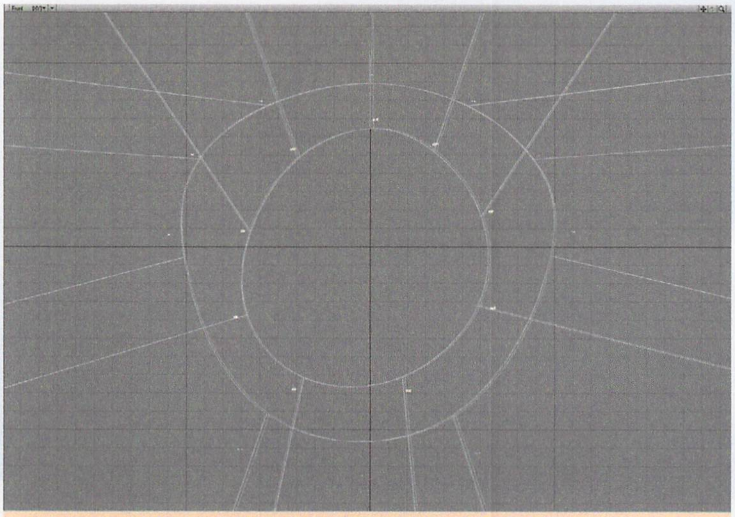
TANKS

In layer 6 we found three fuel tanks. These are three identical objects, only different in size. We are going to use the "Mesh Reknitter" plug-in to create a morph with all the tanks on top of each other. This way we'll be able to make a single UV map for all of them together, as if they were one object. Looking from the Right view, press "a" and you'll see the three tanks. Select the one at the top, cut it, and paste it in layer 4. Then cut the middle one and paste it in layer 5. You'll end up having each tank in one layer; 4, 5 and 6. Set layer 4 as foreground and 5 as background. Select the two polygons as shown in Pic15 and run the "Mesh Reknitter" plug-in. Then, swap the two layers (foreground is 5 and background is 4), select the same two polygons on the other tank and run the "Mesh Reknitter" plug-in again (Pic15).

Click on the "Bkg to Morph" tool, which is under the Map tab, and on the panel that pops up, select the "Airbus_M" morph map and click OK. If all went right, the foreground tank will instantly "jump" to the exact position and orientation of the background tank. If you get crumpled polygons instead, then you've selected the wrong two polygons of the second tank. When you finish with layers 4 and 5, do the same for the 6th layer, which should be the foreground layer and the 4th the background layer. Again, select two adjacent polygons of the tank in layer 6, run the Reknitter plug-in, swap layers, select the same two adjacent polygons of the tank in layer 4, run the Reknitter plug-in, swap layers again and activate the "Bkg to Morph" tool. Select the "Airbus_M" morph map and click OK. Cut all polygons from layers 4 and 5 and paste them back in layer 6. When you use the "Mesh Reknitter" plug-in, you lose your part name info and the wireframe color. Working in layer 6, you can fix this if you like by activating the "Change Part Name" tool and entering "Tanks" for the name. Also, you can activate the "Change Color" tool and choose the "Blue" color for them. Now, activate the "Airbus_M" morph map. Press "F2" to center the tanks in the origin. Using the Rove tool four times sequentially, rotate the tanks in the following order. 1st: X-axis= 1.82, 2nd: Z-axis= -7.6, 3rd: Y-axis= -0.17 and 4th: X-axis= -0.02. Remember each time you activate the Rove tool to press "n" to center the rotation pivot on the objects and bring up the numeric panel. Press "F2" again (Pic16). Then, in a Front wireframe view, move the tanks until you place their center noses on top of Modeler's origin. Dur-


Front and back circular point rows or else, "tank noses"...
Zoom in for minor adjustments...

PIC 17– ZOOM IN TO SEE THE FRONT & BACK CIRCULAR POINT ROWS

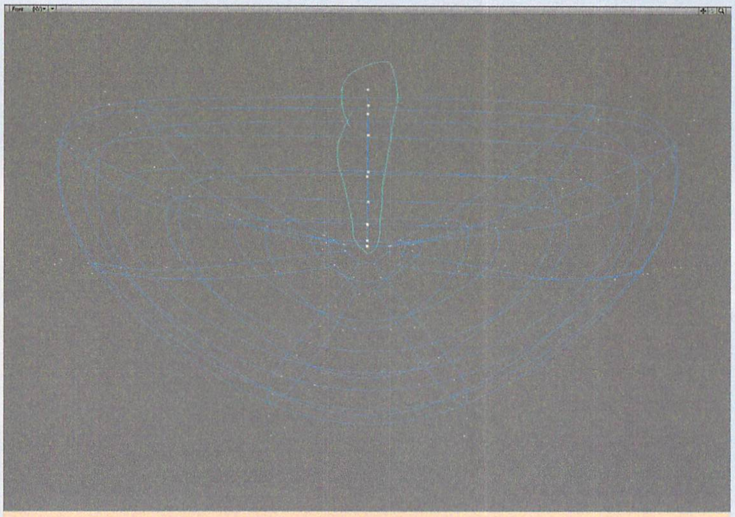


PIC 18– ALIGN THE CIRCULAR POINT ROWS AS SHOWN ABOVE

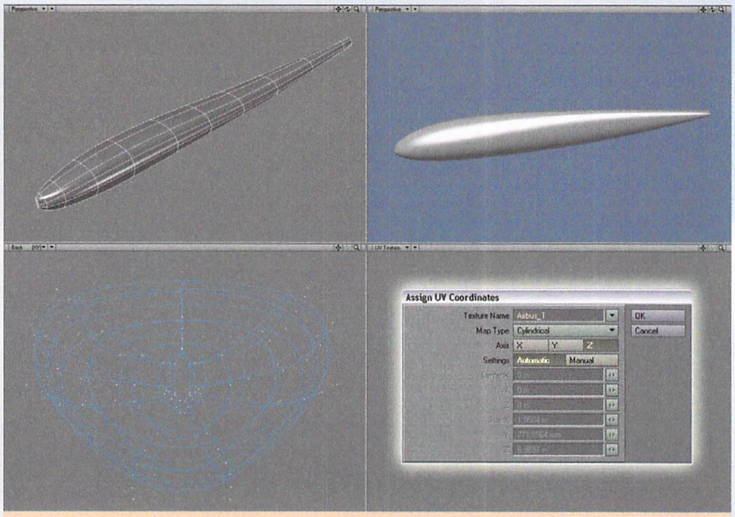
ing the move, you might want to zoom in until you see the front and back circular point rows at the center of the tanks, for minor adjustments, like in Pic17. While zoomed in, you'll see that the two circular point rows are not aligned. Select the smaller one and align it with the bigger circular point row, like in Pic18.

Now, press "Shift + m" to open the Smooth panel. Set the "Strength" to 2 and the "Iterations" to 20 and click OK. Select all the top middle points of the tanks, like in Pic19, and press "Shift +]" once to expand the selection. Move the points 100 mm upwards (Y-axis) in the Front view. Press "Shift + [" to contract the selection and move the points another 50 mm upwards. Press "F2" once again to center the polygons and activate the Make UVs tool and use the settings as in Pic20. Hit enter and you'll see that the generated UVs occupy the whole UV space. We will scale them down, but before that we'll edit them a bit.

Switch to a full UV Texture view and press "Ctrl + u" to un-weld all points. Select the polygons shown in Pic21 and move them to the opposite side. Make sure you align them exactly in place among the neighbor polygons (Pic21).



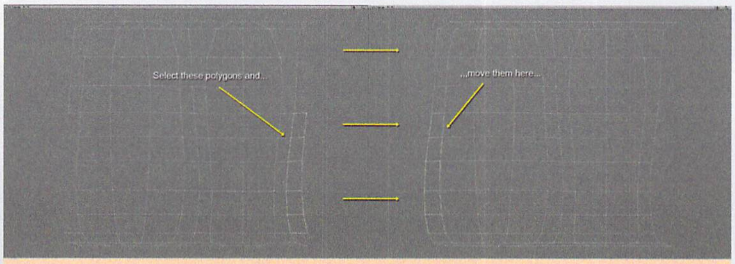
PIC 19– SELECT ALL THE TOP MIDDLE POINTS OF THE TANKS



Assign UV Coordinates

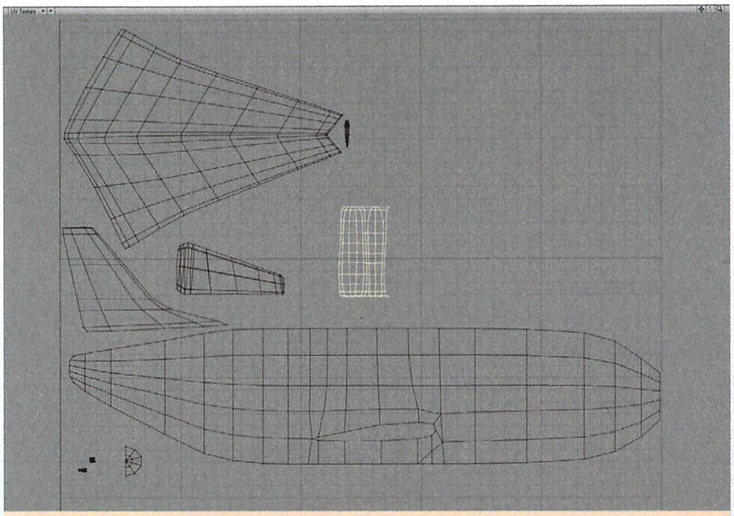
Texture Name: Airbus_T
Map Type: Cylindrical
Axis: Z
Settings: Automatic

PIC 20– ACTIVATE MAKE UV'S & USE THE SETTINGS AS SHOWN ABOVE

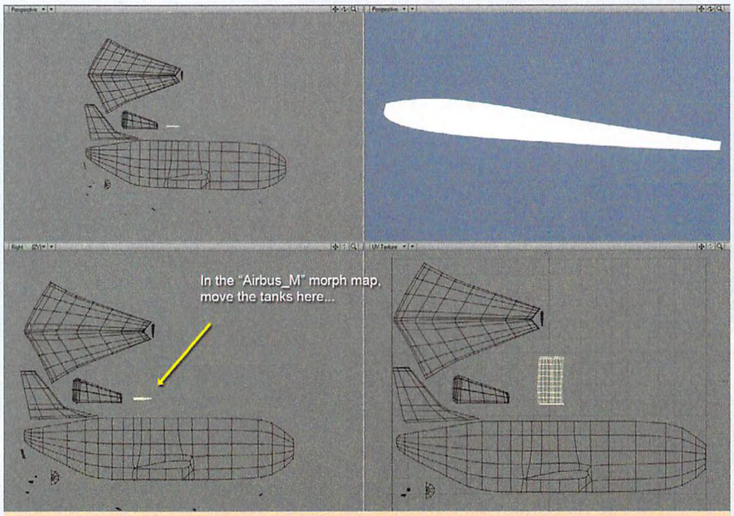


PIC 21– ALIGN THE POLYGONS & POSITION AS SHOWN ABOVE

Deselect all polygons, and in the UV window, scale down everything, using selection as pivot mode, by a factor of 15%. Then stretch the UVs horizontally by a factor of 50%. Press "Alt + 1" to set layer 1 as background and move the UVs of the tanks next to horizontal wing, like in Pic22 (Following page). Merge back all points now. Switch to a four window view and in a Right view ("Airbus_M" should be activated), move the tanks away from the fuselage and flatten them in X-axis at 0 meters, like in Pic23 (Following page). Cut all polygons and paste them in layer 1.

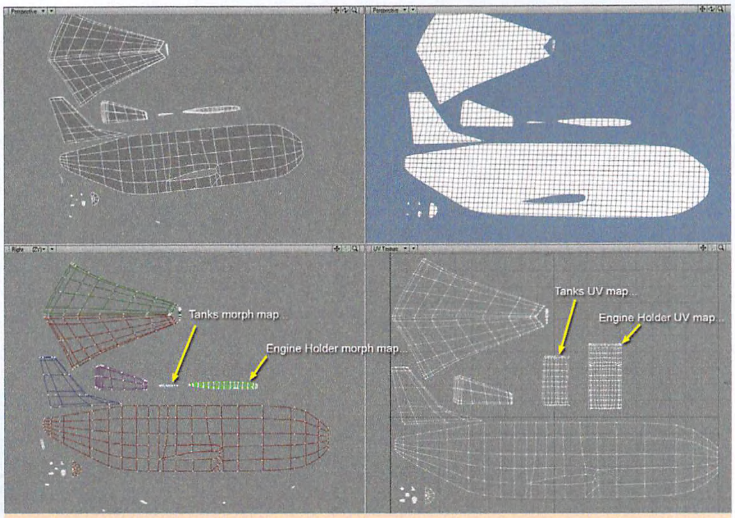


PIC 22– MOVE THE UVS OF THE TANKS NEXT TO HORIZONTAL WING

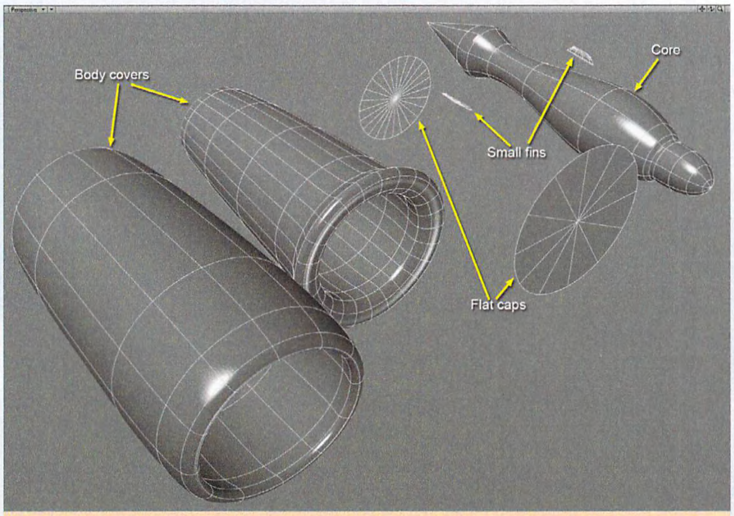


In the "Airbus_M" morph map, move the tanks here...

PIC 23– MOVE THE TANKS AWAY FROM THE FUSELAGE AND FLATTEN



PIC 24– THE GOAL IS TO MAKE UVs FOR THE ENGINE HOLDER



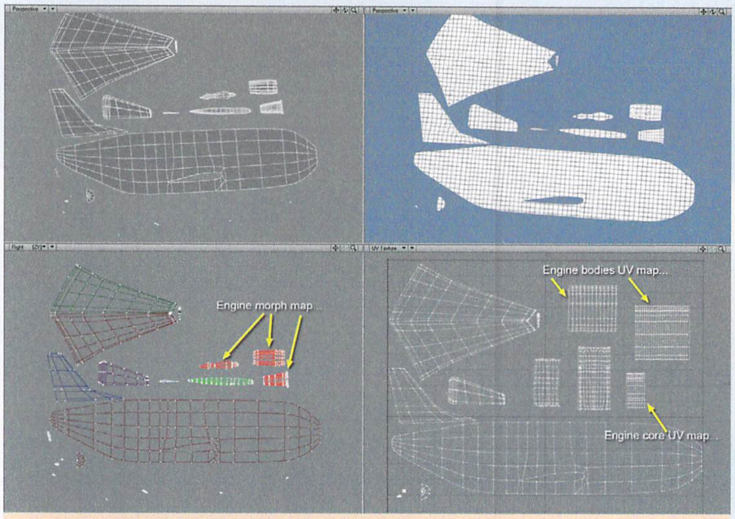
PIC 25– THE ENGINE IS MADE UP OF FIVE DISTINCT PARTS

The tanks textures will be painted using a UV map generated from Modeler, not from Layout, and the two techniques from the first part. This is the reason the morph map for the parts on which we use cylindrical mapping is not the same as their UV map. Our only concern should be that in the "Airbus_M" morph map, these parts do not obscure those that will use the "Front-Projection-UVs" technique, like the fuselage or the wings.

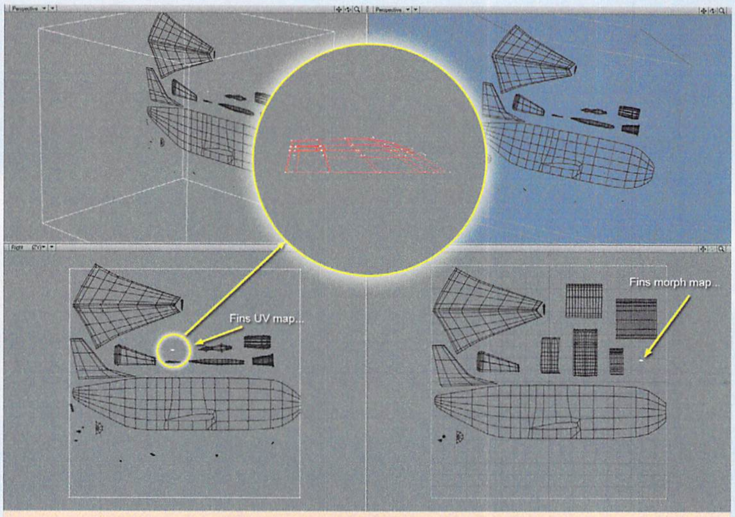
ENGINE HOLDER AND ENGINE

In layer 7 there is the engine holder part and in layer 8 the engine itself. Apply the "Airbus" surface to both of them. The UVs for the engine holder can be created exactly like the UVs for the tanks. I won't repeat the process, but the goal for you should be to make UVs for the engine holder, like in Pic24. The same rule applies for the engine, with small variations. The engine itself is a part of five distinct objects: the core, two body covers, a pair of fins and a pair of flat caps (Pic25). Move them over to empty layers for easier manipulation; the first body cover in layer 4, the other in 5, the core in 6 and the small fins in 7; leave the caps in layer 8.

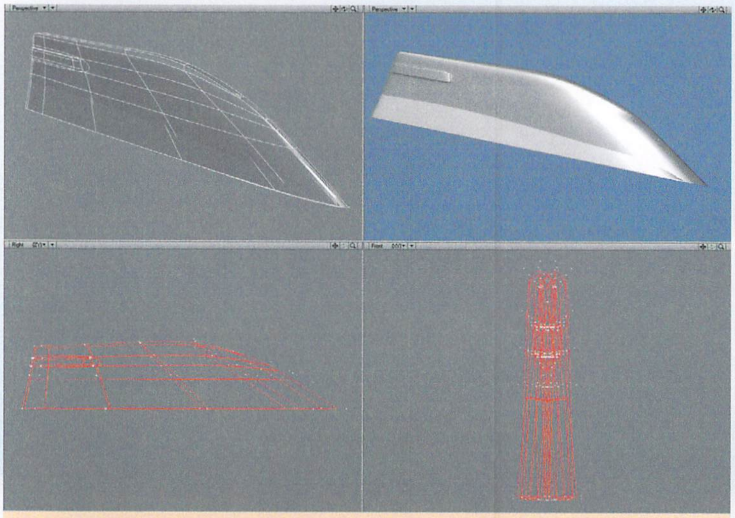
The UVs for the two body covers and the core should be fairly easy to create following the same method we used for the tanks and engine holder. When you are done with them, you should have a result like in Pic26. The UVs for the remaining engine parts (two fins and two caps) are very easy to create. Work in layer 7 where we placed the two fins and activate the "Airbus_M" morph map. Select one fin at a time and using "F2" place them in the origin center. Switch to a Front view and rotate them -67 degrees in Z-axis, until they look as if they were a single object, if viewed from a Right view. Switch to a Top view and rotate one -3 degrees in Y-axis and the other 3 degrees in Y-axis, to make them look even more as if they were a single object (Pic27). Use "F2" to center them at the origin some more. Now, set as foreground layers the 7 and 9 and activate the Make UVs tool. Texture name should be the one and only "Airbus_T," Map type Planar, Axis X and settings Automatic. Hit OK, deselect layer 9 and set layer 1 as background, while 7 is still the foreground layer. Move the fins in the UV Texture view and in the Right view to resemble Pic28. Flatten them in X-axis at 0 meters, and cut and paste them in layer 1. Follow the same procedure to create the planar UVs for



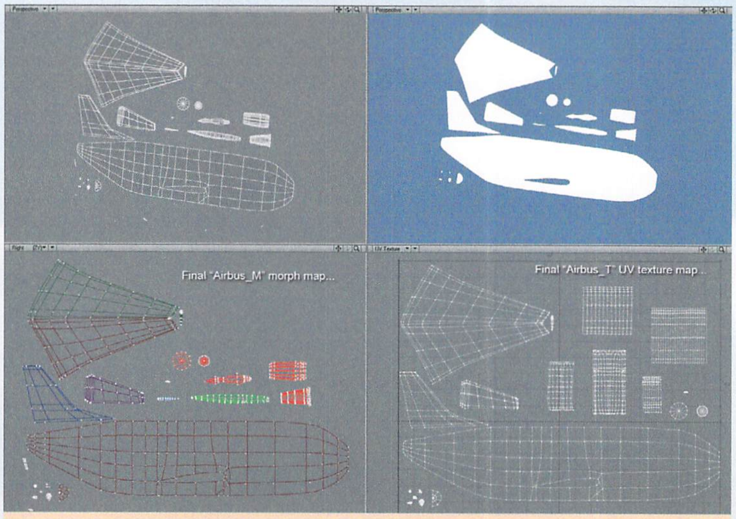
PIC 26– THE TWO BODY COVER UVs



PIC 28– MOVE THE FINS TO THE POSITION SHOWN ABOVE



PIC 27– THE ENGINE FINS SHOULD LOOK LIKE A SINGLE OBJECT


Final "Airbus_M" morph map...
Final "Airbus_T" UV texture map...

PIC 29– THE FINAL UV TEXTURE AND FINAL MORPH MAP

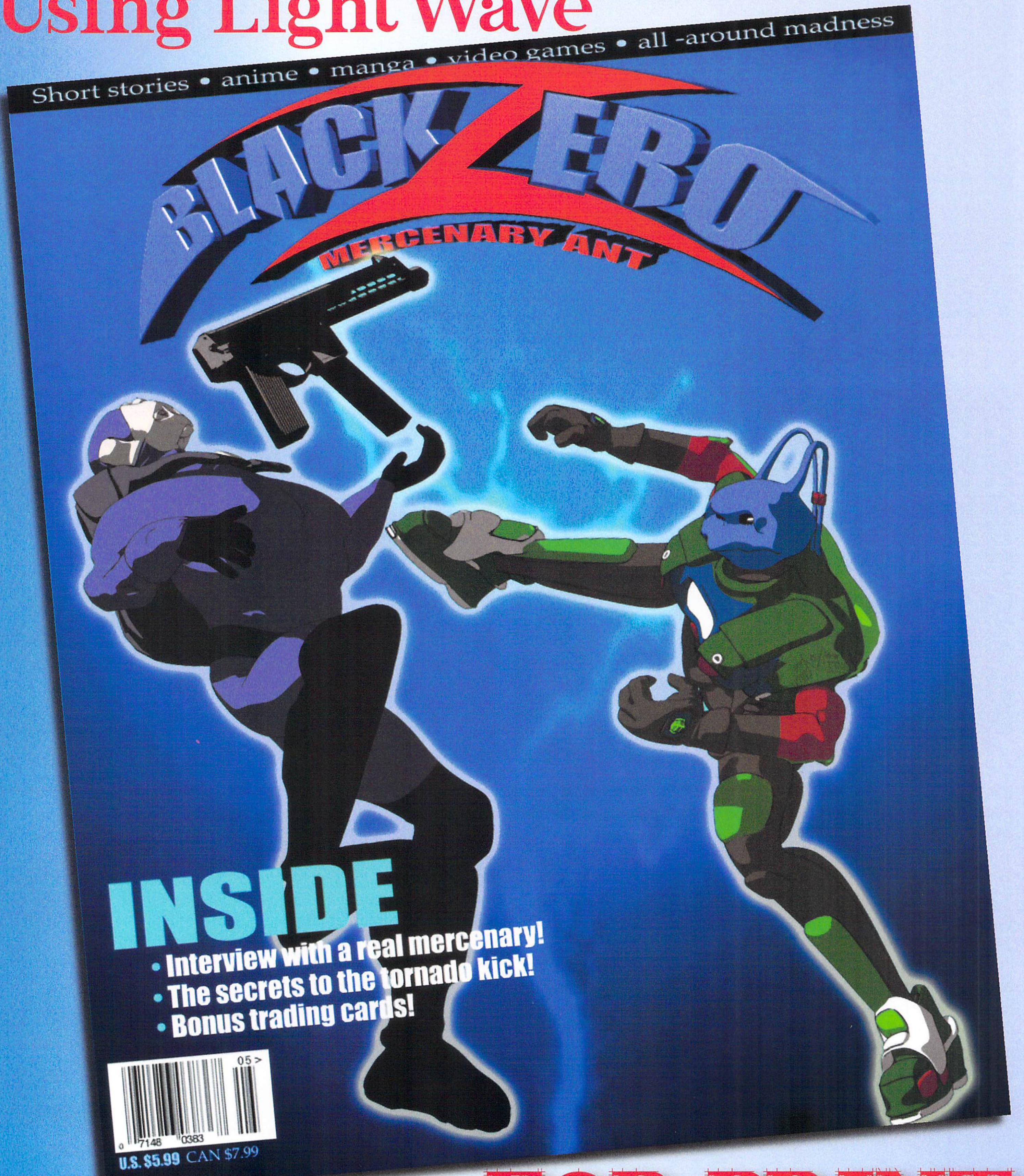
the two remaining caps in layer 8 and when done, bring them into layer 1 also and position them in the morph map and in the UV map, like in Pic29.

CONCLUSION

The Pic29 shows the final UV texture and final morph map, as we created them through this tutorial. I hope you've found it useful and helpful. Next time, we are going to learn how to use both the morph and texture map to export a perfect template from Layout and Modeler, for painting textures in Photoshop and the basis for creating realistic maps for an airliner. If you have any questions or problems working through this tutorial, you can always e-mail me at this address: darkjedi@otenet.gr. Either way, next time you'll be able to download the aircraft object with the final morph and UV maps applied. So, until next time keep on LightWaving ... ■

GREGORY GLEZAKOS (AKA "T.REX" TO HIS FRIENDS) IS AN EXPERIENCED 3D ARTIST WORKING PROFESSIONALLY FOR THE LAST 10 YEARS, EITHER AS A FREELANCER OR CONTRACTED TO MAJOR DOMESTIC PRODUCTION STUDIOS. WHEN BETWEEN JOBS, HE IS TEACHING LIGHTWAVE AND DIGITAL FUSION, EITHER TO STUDENTS OR BY HELPING ARTISTS IN VARIOUS VISUAL FX HOUSES MEET THEIR DEADLINES.

Using LightWave


Short stories • anime • manga • video games • all -around madness
BLACK ZERO
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INSIDE
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• The secrets to the tornado kick!
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FOR PRINT

BY HUNTER WOLF

LightWave is so flexible as an application that the only thing it can't do (yet) is to make all the coffee I consume when working with it. The app offers the hobbyist the tools they need to come home from a hard day's work, put on their headphones, and build models, just for the pure joy of it. It also offers the pros that use LightWave the ability to produce anything from commercials to television programs and movies such as "Jimmy Neutron" and "Star Trek."

But there is another use for LightWave that many people probably overlook – producing artwork for print output. The main reason for this may be because there is no readily apparent way to set up your files for print output, as there is in a page design application such as Adobe InDesign, or QuarkXPress.

> **WHILE 72 DPI IS PERFECT FOR THE SCREEN, OFF-SET PRINTING REQUIRES 300 DPI. A 1024x720 PIXEL IMAGE SEEMS LARGE AT 14.2" x 10", BUT WHEN THAT SAME IMAGE IS CONVERTED TO 300 DPI IT'S ONLY 3.413" x 2.4". IT'S ENOUGH TO GIVE ART DIRECTORS FITS.**

The Camera Properties don't have any noticeable print industry settings, such as inches or picas, to accurately measure how large your render should be to fit on that book cover you're designing for a client. Since the application is primarily used to output to video, film, or the Web, all which use pixels as their standard unit of measurement, it can leave a designer with the impression that LightWave doesn't have print output as an option.

So, when you go ahead and guess the size of your book cover in pixels, and then open the art in Photoshop, you realize that what looks large on a computer monitor, is miniscule on a printed page. So, what to do? Oh, the humanity!

Well, fellow 3D enthusiast, the answer is in a little Lscript plug-in that I have hiding under the mysterious staircase in Layout's Scene Tab. Meet the Print Assistant. Print Assistant, meet the Keyframe readers. Great, now we're all friends.

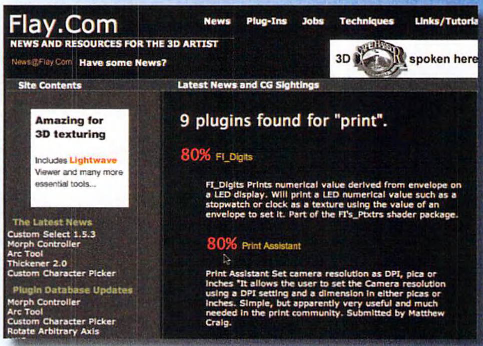
If you don't already have this free plug-in, you can download it from www.flay.com

Once downloaded, find your LightWave folder on your hard drive and drop it in the folder at the end of this path:

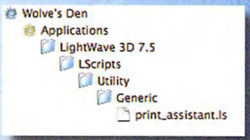
LightWave 3D>Lscripts>Utility>Generic.
Then, once in Layout, you can load the plug-in and it will be placed under the Scene Tab's Utilities group, in a pop-up menu called Generics (you can also use the customization options in Layout to put it there). Open that up and search until you find the Print Assistant.

As you see in this image, I have a scene set up that I'd like to use for a magazine cover. But the safe zones, which are meant for film and video, show me that the image will bleed off the cover, and also, I will lose much of the detail in the shot. You could always crop the unwanted areas in Photoshop later, but for now, we'll use the Print Assistant to adjust the safe zone to fit the characters. In this case, the hero, Black Zero: Mercenary Ant, is kicking the caffeine out of a bad guy (figure Kick).

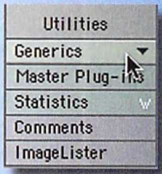
The Print Assistant panel is pretty simple, compared to some of the heavy-hitter panels, such as those in the ParticleFX family, so this should be painless to learn. (figure "Print Assistant 1")


Flay.Com
News Plug-Ins Jobs Techniques Links/Tutoria
NEWS AND RESOURCES FOR THE 3D ARTIST
News@Flay.Com Have some News?
3D spoken here
Site Contents
Amazing for 3D texturing
Includes Lightwave Viewer and many more essential tools...
The Latest News
Custom Select 1.5.3
Morph Controller
Arc Tool
Thickener 2.0
Custom Character Picker
Plugin Database Updates
Morph Controller
Arc Tool
Custom Character Picker
Rotate Arbitrary Axis
Latest News and CG Sightings
9 plugins found for "print".
80% FI_Digits
FI_Digits Prints numerical value derived from envelope on a LED display. Will print a LED numerical value such as a stopwatch or clock as a texture using the value of an envelope to set it. Part of the FI's_Ptxtrs shader package.
80% Print Assistant
Print Assistant Set camera resolution as DPI, pica or inches "It allows the user to set the Camera resolution using a DPI setting and a dimension in either picas or inches. Simple, but apparently very useful and much needed in the print community. Submitted by Matthew Craig.

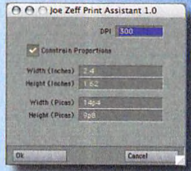
DOWNLOAD THE PLUG-IN FROMFLAY.COM


Wolve's Den
  Applications
    LightWave 3D 7.5
      LScripts
        Utility
          Generic
            print_assistant.ls

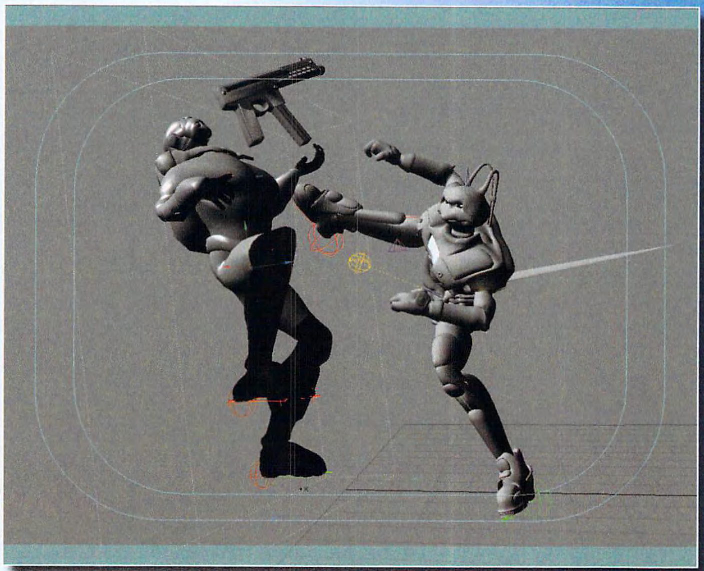
SAVE THE PLUG-IN AT THE END OF THIS PATH



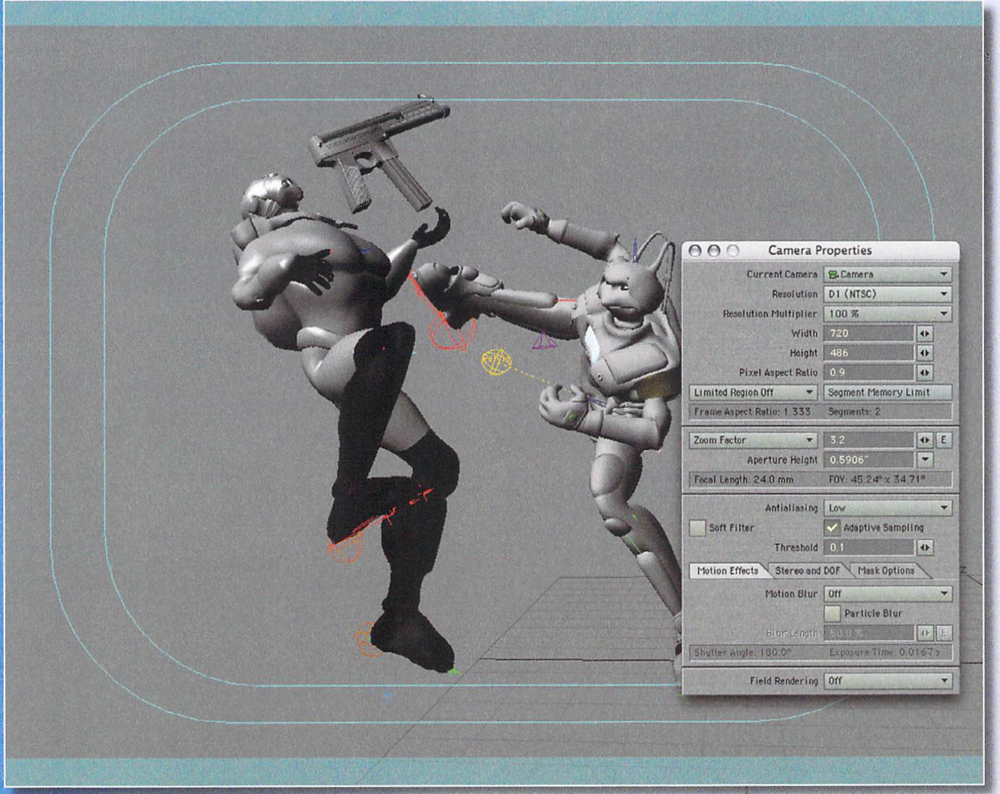
LOAD THE PLUG-IN THE GENERICS POP-UP


Joe Zeff Print Assistant 1.0
DPI 300
☑ Constrain Proportions
Width (Inches) 2.4
Height (Inches) 1.62
Width (Picas) 14p4
Height (Picas) 9p8

PRINT ASSISTANT 1



KICK - OUR HERO KICKING SOME BAD GUY

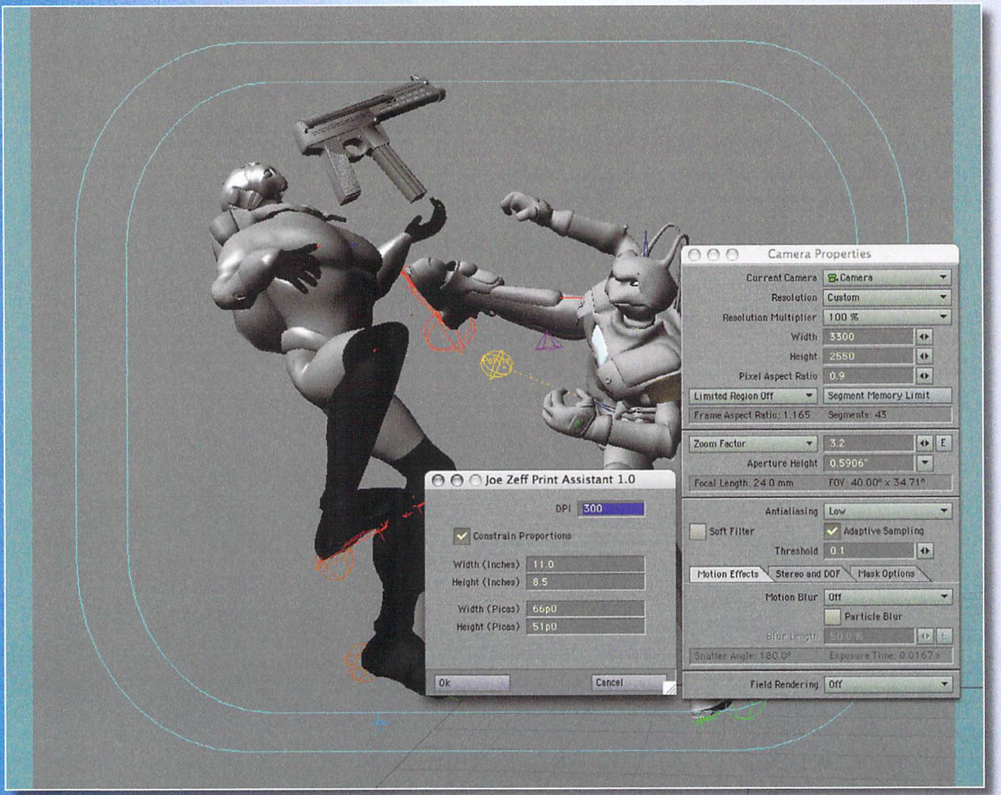


Camera Properties

Current Camera	Camera
Resolution	D1 (NTSC)
Resolution Multiplier	100 %
Width	720
Height	486
Pixel Aspect Ratio	0.9
Limited Region Off	Segment Memory Limit
Frame Aspect Ratio: 1.333	Segments: 2
Zoom Factor	3.2
Aperture Height	0.5906"
Focal Length: 24.0 mm	FOV: 45.24° x 34.71°
Antialiasing	Low
☐ Soft Filter	☑ Adaptive Sampling
Threshold	0.1
Motion Blur	Off
	☐ Particle Blur
Blur Length	50.0 %
Shutter Angle: 180.0°	Exposure Time: 0.0167 s
Field Rendering	Off

Motion Effects
Stereo and DOF
Mask Options
E

NTSC - BROADCAST TV RESOLUTION



Camera Properties

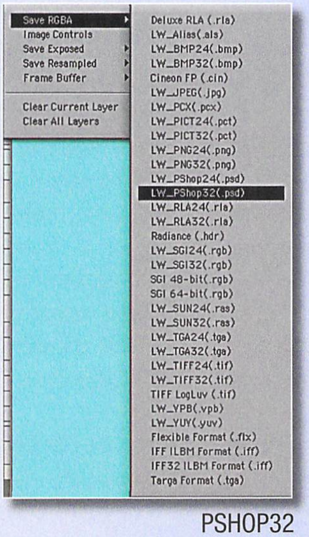
Current Camera	Camera
Resolution	Custom
Resolution Multiplier	100 %
Width	3300
Height	2550
Pixel Aspect Ratio	0.9
Limited Region Off	Segment Memory Limit
Frame Aspect Ratio: 1.165	Segments: 43
Zoom Factor	3.2
Aperture Height	0.5906"
Focal Length: 24.0 mm	FOV: 40.00° x 34.71°
Antialiasing	Low
☐ Soft Filter	☑ Adaptive Sampling
Threshold	0.1
Motion Blur	Off
	☐ Particle Blur
Blur Length	50.0 %
Shutter Angle: 180.0°	Exposure Time: 0.0167 s
Field Rendering	Off

Joe Zeff Print Assistant 1.0

DPI	300
☑ Constrain Proportions	
Width (Inches)	11.0
Height (Inches)	8.5
Width (Picas)	66p0
Height (Picas)	51p0

Motion Effects
Stereo and DOF
Mask Options
E
Ok
Cancel

NTSC 2 - RESOLUTION CHANGED FOR PRINT



Save RGBA
Image Controls
Save Exposed
Save Resampled
Frame Buffer
Clear Current Layer
Clear All Layers
Deluxe RLA (.rla)
LW_Alias(.als)
LW_BMP24(.bmp)
LW_BMP32(.bmp)
Cineon FP (.cin)
LW_JPEG(.jpg)
LW_PCX(.pcx)
LW_PICT24(.pct)
LW_PICT32(.pct)
LW_PNG24(.png)
LW_PNG32(.png)
LW_PShop24(.psd)
LW_PShop32(.psd)
LW_RLA24(.rla)
LW_RLA32(.rla)
Radiance (.hdr)
LW_SGI24(.rgb)
LW_SGI32(.rgb)
SGI 48-bit(.rgb)
SGI 64-bit(.rgb)
LW_SUN24(.ras)
LW_SUN32(.ras)
LW_TGA24(.tga)
LW_TGA32(.tga)
LW_TIFF24(.tif)
LW_TIFF32(.tif)
TIFF LogLuv (.tif)
LW_VPB(.vpb)
LW_YUV(.yuv)
Flexible Format (.flx)
IFF ILBM Format (.iff)
IFF32 ILBM Format (.iff)
Targa Format (.tga)

PSHOP32

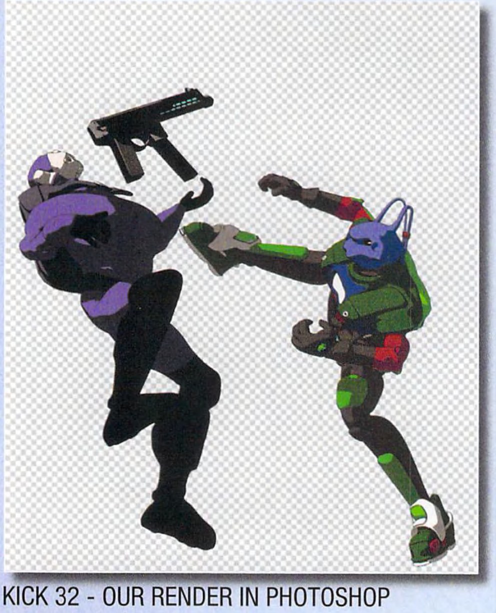
Now you can see, from this image, that when the Camera is set to render at the NTSC broadcast TV resolution, the file is measured in pixels (720 x 486). This pixel measurement is designed to fit great on your TV screen, but the resolution is not so great for printing. (figure "NTSC")

But after bumping up the resolution to 300 dpi (which is perfect for printing), deselecting the Proportional check box in the Print Assistant, and then entering 8.5 x 11 for our cover, the Camera setting goes into Custom mode, and the pixel resolution is now a whopping 3300 x 2550! Media meant to be displayed at 72 ppi (pixels per inch on a screen), is drastically different for media meant for 300 dpi (dots per inch, which is what a printing device uses). (figure "NTSC 2")

Press F9 to do a render, after setting up your lights, etc. to see how massive the output is. It may not actually even fit totally on your monitor. I use a 20" Apple Cinema Display, and it barely fits one corner of the image.

Now we need to save this render (the render options are in the upper left corner of the rendered image) to a format to bring into Photoshop, so we can edit it and add more elements, such as a logo and text for the magazine's contents. Since we're going to composite this render with a background and a logo, we'll render it out as a 32-bit .tiff file. This way, LightWave automatically enables an alpha channel and ignores any items that have no surfaces, points or polygons. Also, this will give the image a transparent background. Nice! (figure "PSHOP 32")

Fire up Photoshop and open the image. As you can see, checkerboards indicate an invisible background. (figure "kick 32")

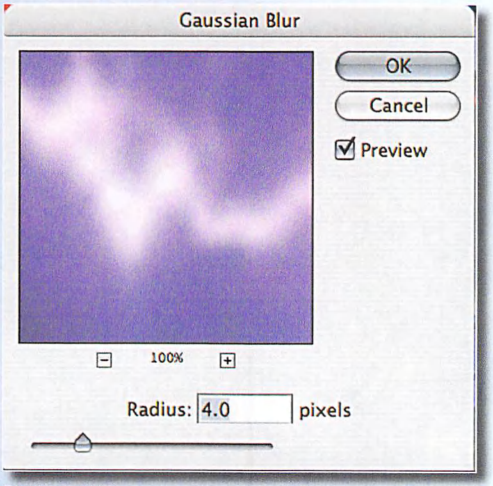


KICK 32 - OUR RENDER IN PHOTOSHOP

Next, load in a cool photo of a lightning storm or something and stretch it so it covers the entire background. Don't worry if it's pixilated, because we will apply a Gaussian blur to it in a moment.

Also open any text element, such as a logo (rendered out as a 32-bit .tiff in the same way), or create some text with the Text tool within Photoshop. Name your layers as you work to avoid confusion in the future. It's a great habit to get into. One good reason is that your client may not have comments on your work for a few weeks, and by the time they do call, or you meet to discuss the work, you'll have forgotten what parts of the image are on what layer. Organization is key in the graphics industry!

Once all of the elements are in place, select the layer with your background, and choose Filter>Blur>Gaussian Blur. Increase the blur to 4 pixels and click OK. (figure "Blur panel")



Gaussian Blur

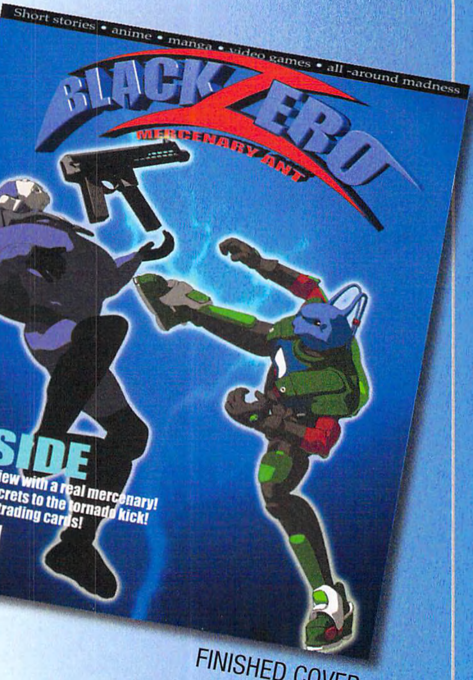
Radius: 4.0 pixels

☑ Preview

BLUR PANEL

After all of that work, your cover is ready to either be printed out from Photoshop (after converting it to CMYK, of course) or saving it out as an .EPS to use in a page layout application for final adjustment, additional copy (text) and output. (figure "finished cover")

That's all there is to it. Now go out there and make some awesome covers for stuff. Also, check out the cover of Keyframe issue 38. Proof that this works, baby! 🟥



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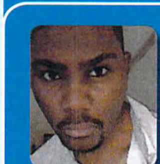

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3DCONNEXION SPACEBALL 5000

BY AKIKO ASHLEY

3D CONTROLLER REVIEW
TWO HANDS ARE BETTER THEN ONE

3DCONNEXION HAS INTRODUCED THE SPACEBALL 5000, A 3D MOTION CONTROLLER THAT WORKS TOGETHER WITH YOUR TRADITIONAL MOUSE. IT IS BEAUTIFULLY DESIGNED AND SIMPLE TO USE.

The instructions and exercises that come with the SpaceBall 5000 help you quickly adapt to the way it works. At first, when I saw the two-handed work method, I was skeptical. I found that it is amazing how quickly the mind adapts to the way the two-handed method works once you start using the SpaceBall 5000. You pan, zoom, and rotate 3D models with the controller while the other hand selects using the mouse. Once you get used to it, it is very hard to consider going back to a single mouse. The SpaceBall 5000 has 12 programmable buttons that keep functions and keyboard modifier macros right at your fingertips. You can adjust the sensitivity of the motion controller in an easy to use interface. The design of the motion controller is made with quality materials that respond well to stress on heavy production jobs.

3DCONNEXION'S SPACEBALL 5000 TWO-HANDED MOTION CONTROLLER

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- Optical/non wearing measuring system
- 12 programmable buttons
- Full Plug-and-Play capability (USB only)
- 6x faster data rate for better control (USB only)
- Support 100+ applications including Maya, 3ds max, Cinema 4D and Softimage (A new driver was recently released for Softimage)

It works the way an artist or engineer thinks. Architects, Engineers and Medical Professionals will appreciate the production workflow capabilities, increasing productivity up to 30%. CGI Pros will love the flexibility of working with both hands and reducing fatigue on their wrists and fingers. I have used the motion controller while working in Photoshop, LightWave and Maya. You feel the additional control over your tools without all the fuss. I saved time while working in a much more convenient environment. There are over 250,000 designers and animators worldwide who have benefited from the two-handed work style in over 100 applications. The SpaceBall 5000 is about $499 on the Web, but you can search around on the Web for a better price. If you need a productivity tool it is worth it. Wait till you try it, it changes everything. For more information on the SpaceBall 5000, go to www.3Dconnexion.com. ■

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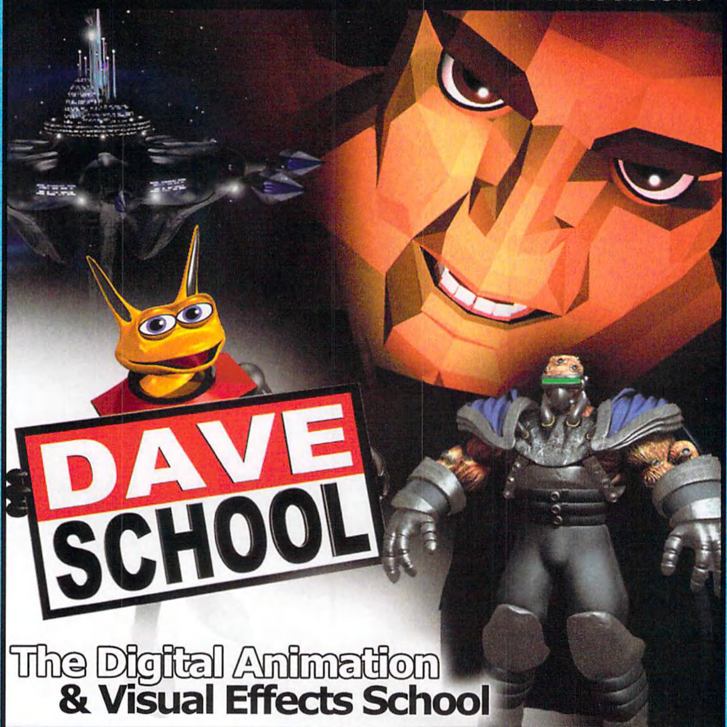

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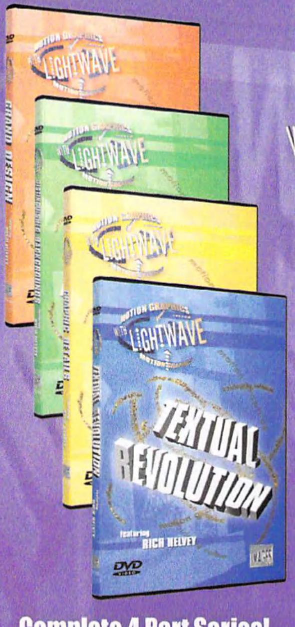

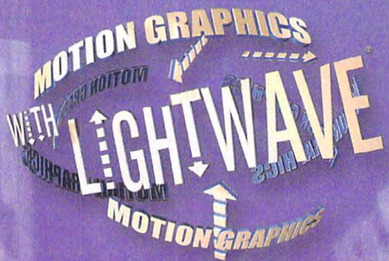

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FINAL RENDER

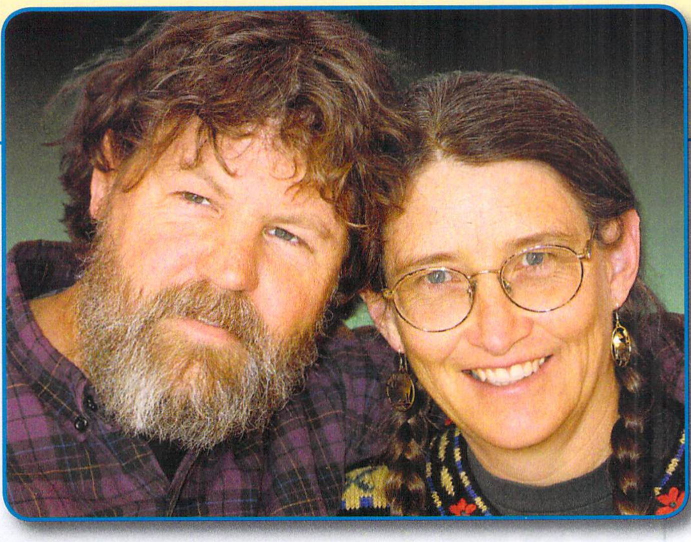
PERFECTIONISM

BY ANDREA CARVEY

There is something about computer-generated modeling and animation that tends to bring out the perfectionist in us. What's with that? It isn't as if we're so concerned about how perfect the rest of our lives are. Why is it that we can spend endless hours working to get a model of a door absolutely perfect, down to the screws in the hinges (that no one will ever see), yet it is impossible to remember to leave the pen next to the phone or pick up the socks in the bathroom? Why is it that we can get lost in the minutia of textures and surfaces, but ignore some important things, such as the water bill? (The electric bill, however, is another story.) When was the last time you actually balanced your checkbook? No, I'm not talking about the "Oh, it's a few dollars off" kind of balancing. I'm talking about obsessive, to-the-penny balancing. The bank isn't always right you know. But who cares? It's just a few cents, and a few cents doesn't seem to bother us. So, why does it bother us when the threads on a bolt, inside a vehicle, way off in the distance aren't perfect?

Well, it's all about control. The nature of 3D modeling and animation provides the perfect environment for the perfectionists among us who have given up trying to control the real world. We can be the creators of our own little world. If we want a mountain over there, we can put the mountain over there. If we want a stream right here, we can put a stream right here. A banana tree can bear fruit in the dead of winter - in the Antarctic. It begins to dawn on us that we can create things that are not bound by the laws of nature, or even physics. Whoa! That's weird stuff. Which makes it a great tool for science fiction aficionados - real looking, but somehow foreign landscapes, life-like imaginary creatures, bizarre and unusual human beings. (Funny, it's beginning to sound like the guest list for Jerry Springer.)

In our 3D world, we can control just about everything, unlike the weeds, the kids, the neighbors, or the universe. (Notice that I said "just about everything." I'm ignoring the whole issue of computers, which, as we all know, nobody can control.) The biggest advantage of our 3D world is that we can populate it with people who don't piss us off. We can make them do whatever we want. And we can make them all good looking. Because we seem to have so little control over the real world, we revert to a world in which we have unlimited control. And we like it! However, that doesn't necessarily explain the perfectionistic streak that forces us to toil beyond the limits of human endurance on some obscure and insignificant detail.



In the real world, we are limited by the size of things. It is physically impossible for us to deal with things that are too small or too large. In our 3D world, however, we can explore the expanses of space and zip from galaxy to galaxy, and then zoom into a carbon atom, in a leaf, on a tree, growing on Earth. Normally, we just can't do that! This fluidity of scale is one of the most valuable and amazing things about 3D animation. It is also our downfall. It is why we don't know when to stop. Because we can keep increasing or decreasing the scale, and we can go deeper and deeper into details that don't matter, at least, to anyone but us. We have to learn to 'just let it go'. Yes, I know it's hard, but it's for our own good.

Maybe it would help to decide ahead of time what scale you are going to be using. Then, when you start to slide into perfectionism and are tempted to keep changing the scale, switch back to the original scale occasionally to see if the detail is getting lost. If it is, then that's as far as you go. Painful, yes, but it probably builds character. Besides, you can use all of that misplaced perfectionism in your real life. Just think - gourmet meals, clean clothes, sparkling car, spotless house, balanced checkbook – well, not that perfect.

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